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Review of Voluntary Approaches in the European Union

Feasibility Study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China

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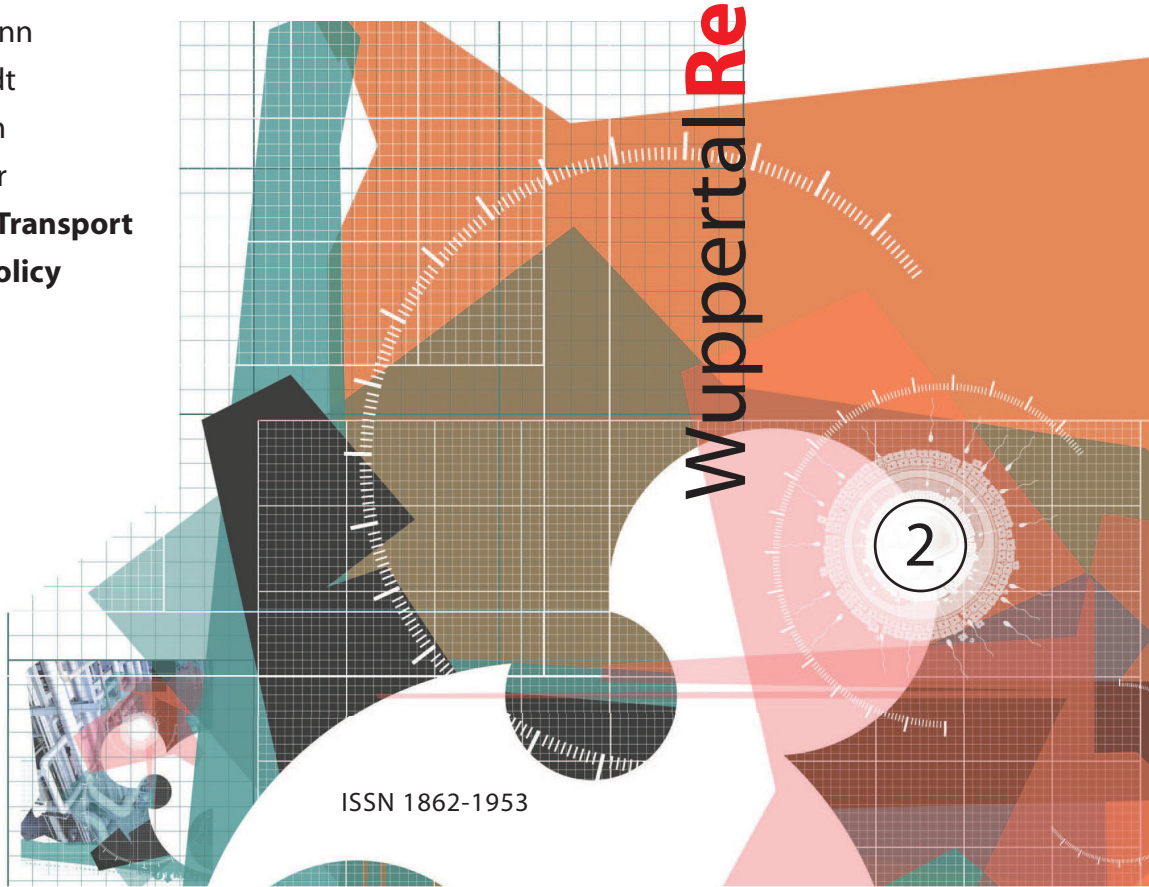
RG 2: Energy, Transport and Climate Policy



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Wuppertal Report No. 2

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Wuppertal, December 2005

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List of Acronyms

ACEA	European Automobile Manufacturers Association
BDI	Federation of German Industries
BFR	Brominated Flame Retardants
CBK	Centraal Brouwerij Kantoor (Dutch Brewers' Association)
CDM	Clean Development Mechanisms
CSDPA	Czech Soap and Detergent Products Association
EACEM	European Association of Consumer Electronics Manufacturers
EAP	Environmental Action Programme
EC	European Commission
ECJ	European Court of Justice
ECP	Energy Conservation Plan
EDTA	Ethylenediaminetetraacetic acid
EEA	European Environmental Agency
EEC	European Economic Community
EEP	Energy Efficiency Plan
EIA	Environmental Impact Assessment
EMAS	Eco-Management and Audit Scheme
EMCC	Environmental Management College of China
EU	European Union
EUR	Euro
ISO	International Organization for Standardization
LTA	Long Term Agreement
MoE	Ministry of Environment
NEPP	National Environmental Policy Plan
NGO	Non-Governmental Organisation
NJEPB	Nanjing Environmental Protection Bureau
NOVEM	Netherlands Agency for Energy and Environment
NTA	Nitrilotriacetic acid
OECD	Organisation for Economic Cooperation and Development
PBDE	Polybrominated Diphenylethers
PCA	Polycarboxylat
PVC	Polyvinylchlorid
SEA	Strategic Environmental Assessment
SEC	Specific Energy Consumption
TERM	Transport and Environmental Reporting Mechanisms
UNEP	United Nations Environmental Programme
VBE	Verification Bureau Energy
VCI	Verband der Chemischen Industrie (Association of the Chemical Industry)
VNO-NCW	Confederation of Netherlands Industry and employers

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Executive summary

The study "Review of voluntary approaches in the European Union" has been conducted in the context of the project "Feasibility study on demonstration of voluntary approaches for industrial environmental management in China" and aims at evaluating the experience with voluntary agreements between industry and public authorities in the European Union. It is part of a comparative study between Europe and China. The study aims at providing a basis for adoption and further development of voluntary agreements in China. Therefore, conceptual information and case studies are presented in order to illustrate the instrument, its chances and risks as well as success factors.

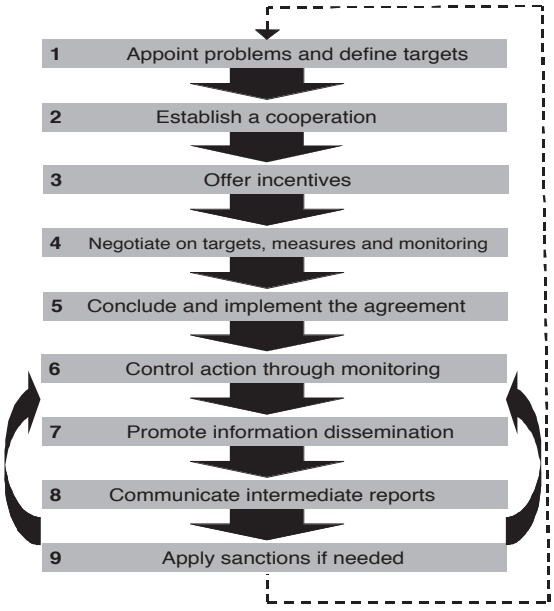
Voluntary agreements are widely spread over the European Union. But there are considerable differences between the member states: In some European countries, only a few agreements have been concluded whereas in e.g. the Netherlands and Germany agreement schemes and more than 100 separate agreements cover a range of different sectors and environmental issues. In order to define voluntary agreements two aspects must be highlighted: Firstly, industry has to participate voluntarily. Secondly, there is an interaction between the public authorities on the one hand and industry on the other hand in order to enforce environmental action. Some voluntary agreements examined in this study are closer to self-commitments of industry where interaction with public authorities is low, while others demand intense negotiations with public authorities and end up in a legally binding civil law contract. Public schemes (like ISO 14001), in which companies can participate voluntary as well, are not covered in this study.

To provide a better picture of European practice, a choice of four good practice agreements is presented in case studies. The Dutch Long Term Agreements (LTA) and the benchmarking covenant on energy efficiency, the European ACEA-agreement on the reduction of CO_2 emissions from passenger cars, the Czech Agreement on gradual reduction of impact of laundry detergents on the environment and the German industry's commitment on phasing out of polybrominated diphenylethers (PBDE) as flame-retardants in synthetic materials were analysed. Selection was not only based on the success of the agreements but also on the transferability to China and the fact that a range of agreement types, environmental issues and sectors should be covered. These cases have been evaluated regarding problem solving capacity, i.e. environmental effectiveness, legitimacy and costs. As environmental effectiveness can hardly be measured directly, the analysis focused on the ambitiousness of targets and the compliance with the agreed targets.

Each of the presented agreements has its strengths and weaknesses. The German and European examples have a good performance according to the existence of quantitative and measurable targets. Intermediate targets are helpful as well. The critical aspect of the ACEA case is ambitiousness of targets. E.g. the case of Dutch Long Term Agreements shows that it is useful to carry out studies to check the technological and organisational potential for energy efficiency. The Czech case shows that a concrete time horizon, introduced rather lately, is important and soft targets like consumer information can be hardly supervised. A weakness of the Czech detergent agreement is the rather limited sanction fee. However, the working group, like in the Dutch LTA, led to soft effects like learning and information dissemination. In contrast to that, the strong political framing is a strength of the LTA and the benchmarking covenant. It is embedded in a policy mix with incentives and sanctions to promote compliance. In addition, an independent government agency is involved in a comprehensive monitoring and guards the implementation of the agreement. Besides the Dutch example, the European and Czech case provide good monitoring mechanisms for an effective supervision of the agreements as well.

Generally speaking, success factors incorporate a comprehensive target setting with a time frame and a structured process organisation. Monitoring procedures and methodologies are an important feedback mechanism to push action and ensure compliance. Last but not least, the compliance pressure through in-built and external incentives and sanctions (framing) as well as the integration in a policy mix leads to a successful implementation of the policy instrument. Furthermore, there are some supportive factors for the emergence of voluntary agreements such as a policy culture of mutual trust between government and industry and the willingness to co-operate. In addition, the existence of a credible threat and a homogeneous industry sector support emergence.

This study provides information to develop a model for China and the city of Nanjing. To support this task, finally nine steps are identified that lead to successful voluntary agreements:



1 Introduction

Voluntary agreements are a relatively new factor in environmental policy in Europe. In the 1990s, the use of voluntary approaches was one of the most rapidly growing — in terms of number and scope — policy instrument for environmental management in Europe. Trying to avoid problems occurring in using 'command-and-control' and economic instruments, industry leaders and government policy-makers, de facto, have created voluntary approaches. Thus, voluntary agreements are neither the product of government intervention, nor of political scientists' theories. Voluntary agreements are pragmatic responses to the need for more flexible ways to implement measures and complex environmental problems (Highley, Convery, Lévêque 2001).

Today, at the conceptual level, there is general consensus that sustainable development cannot be achieved through a regulatory approach alone (UNEP 2000). Voluntary agreements are needed to meet the complex challenges of sustainable development. However, each policy instrument is having its own benefits and limits. Therefore, the chances and risks were an important subject in scientific debate as well.

This study contributes to the discussion in terms of providing a basis for discussing European experiences with a new perspective: A transfer of the approach of joint action between public authorities and industry to China. Although few attempts to introduce voluntary agreements in China exist (Price et al. 2003), it is a challenging task to support such a comprehensive implementation process. This review of experiences with voluntary agreements in Europe provides a basis for the development of an adoptable model.

1.1 Background

The study is part of a project called “Feasibility Study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China”. The project is financed within the AsiaProEco-programme of the European Union, which is designed to strengthen the environmental dialogue between Europe and Asia. It is lead by the Dutch Energy-agency SenterNovem.

The project aims at evaluating the experience with voluntary or negotiated agreements between industry and public authorities within the European Union and adopting it to the Chinese context. The project is focussing on the City of Nanjing where heavy industry is responsible for a high rate of different emissions. It is intended that Nanjing will become a National Environmental Model City in China. To achieve this goal, a group of 29 companies in Nanjing are involved in the project. Furthermore, the project will identify both the positive and negative

factors influencing the adoption of the voluntary environmental management approaches in China.

Based on the overall goals, the project incorporates three basic elements:

- To review different European voluntary environmental management approaches and provide a systematic analysis on advantages and disadvantages of command-and-control instruments in China;
- To assess the feasibility of voluntary approaches for environmental management under Chinese framework-conditions and survey the expectations of companies and the willingness to participate; and
- To develop a suitable voluntary environmental management model for China.

Within these steps, several communicative actions are integrated: Besides three workshops a course and study tour in Europe will be organised for the Chinese public environmental authorities and companies' environmental managers.

The Wuppertal Institute is responsible for scientific support. Its central task is to carry out the review of voluntary approaches in the European Union. This Review of European experiences is part of a comparative study conducted in the second phase of the project. The Environmental Management College of China (EMCC) provided a similar review of Chinese experiences with command-and -control instruments. Both together formed a basis for a comparative analysis of industrial environmental management approaches in China and in European countries. The Nanjing Environmental Protection Bureau (NJEPB) was responsible for this task.

During the preparation of the study, the Wuppertal Institute was supported by SenterNovem. The results of the European review were provided to the Chinese partners in a first draft. The comments of SenterNovem, NJEPB and EMCC as well several contributions from the attendants of the first joint project workshop in Nanjing on February 3–4, 2005 were integrated in the final version. After the workshop the study was revised and completed.

1.2 Objectives and methodology

The aim of the study “Review of Voluntary Approaches in the European Union” (activity four of the project proposal) is to provide the Chinese counterparts a systematic analysis of European experiences with voluntary agreements. The results — together with a parallel review of Chinese command-and-control environmental management — will be the basis for assessing the opportunities to adapt voluntary approaches in China. Different types of voluntary approaches are discussed; nevertheless the study will focus on voluntary agreements between industry and public authorities. Public environmental management schemes like ISO 14001 are not considered in order to focus the scope of the study.

To reach the objectives, the study highlights two aspects: On the one hand, detailed descriptions will endorse the general understanding of voluntary agreements. On the other hand, the evaluation of European experiences should lead to identify success factors and risks.

The main research questions are:

- Why are voluntary agreements for environmental management increasingly adopted?
- What kind of chances and risks has the voluntary approach?
- What types of agreements exist?
- Which role do they play in effective environmental management?

To answer these questions, the study is based on a combination of different methodologies.

A basic method is a literature review to present the state of the art in political science and economy. Types and characteristics as well as chances and risks of agreements were subject to scientific debate since the late 1990s. To gain comprehensive information about the state of the art in European agreements, a broad internet-recherché was carried out and several telephone and e-mail contacts were made with national and international experts, administration and practitioners (see references). Based on the recherché and the literature analysis a screening of existing case studies provided more detailed information concerning addressed policy issues, types, involved sectors, geographical distribution and trends.

The main methodological approach is the concept of four comparative case studies. Based on the above-described recherché in European Union member states as well as on European level, four case studies were selected (methodology of selection see chap. 4.1). These case studies provide more detailed information about the design as well as the success of the European experiences. The case studies highlight the success factors of voluntary agreements. This approach was chosen to provide a constructive basis for adopting different elements.

Within the case studies, again different methods are used: A secondary analysis of existing cases studies and an additional internet-recherché were used to describe and evaluate the performance. In addition, some (telephone) interviews with involved people were conducted as well. The evaluation took the form of an assessment regarding problem solving capacity, legitimacy and costs. Based on these categories, a comparative multi-case analysis led to the formulation of more general success factors.

1.3 Content of the report

The study contains six chapters: Following the introduction, the second chapter includes information about the context of policy-making in the European Union in order to show some central differences to China. The third chapter describes the development of voluntary approaches in Europe. Starting point is the definition of types. Based on an analysis of literature the reasons, functions and advantages of choosing voluntary agreements are illustrated. This is followed by a description of the geographical and sectoral distribution.

To provide a more profound picture about European experiences, the fourth chapter focuses on successful cases from different European countries. Based on the detailed description of four examples more comprehensive conclusions about success factors will be presented in chapter five. In addition to that, context information and conditions for the emergence of voluntary agreements in Europe are presented in order to relate these factors to the institutional and political background.

Finally, to provide a starting point for the comparative study and the development of a model, the sixth and concluding chapter gives some preliminary and general suggestions for a transformation of European experiences to other countries. Thereby, nine steps how to come to successful voluntary agreements are identified.

2 European environmental policy

As pollution does not stop at national borders and the opening of the market also affects environmental legislation, the European Union addresses the issue of environmental protection. Complex environmental problems like climate change could not be tackled without joint action by all EU countries. Voluntary environmental agreements on European level are a relatively new policy instrument. The main characteristic is that they represent common action of public and industrial actors to address environmental problems. They are independent from the decision-making level but were developed mainly on national (between governments and industry) and European (between the European Commission and industry) level. Nevertheless, one can find examples on the regional and local level, too.

The evolution of environmental policy on European level

Economic regulation is highly connected with environmental aspects. Due to the raise of awareness about environmental problems, the subject "environment" became more important on the European level at the Paris summit in 1972. A high quality of living was approved as a European objective. As a consequence, the first Environmental Action Programme, established in 1973, can be considered as the first concrete step towards a European environmental policy (Schwarz 2002). After ten to 15 years of environmental legislation (e.g. the introduction of Environmental Impact Assessment in 1985), supranational actors like the European Commission (EC) and the European Court of Justice (ECJ) as well as national governments supported the recognition of environmental policies as important domain. That was the reason for incorporating the aspect of environment into the Single European Act in 1987. Furthermore, the Single European Act raised the awareness that creating a single market would generate new requirements for policy making, such as stronger coordination rather than further specialisation.

In the EU 1997 treaty reform of Amsterdam environmental protection follows the principle of Environmental Policy Integration. This means that environmental objectives should be already considered in all sectoral policy initiatives. Since the European Council in Cardiff in 1998, the idea has been implemented more concretely. For example, the European Environmental Agency (EEA) has set up the Transport and Environmental Reporting Mechanisms (TERM). The publication of the European Union's Sustainable Development Strategy at the Gothenburg Summit in 2001 marked another milestone (European Commission 2001a). The proposed integration of environmental concerns into sector policies combined with the current debate on the White Paper on new governance instruments (European Commission 2001b) indicates the level of uncertainty about future

trends in the environmental sector as well as related policies and shows the search for new instruments.

Policy instruments and voluntary agreements

Even if there are differences between the countries, European-level policies are a good example for policy instruments in Europe. Until now, the EU has adopted over 200 environmental protection directives that have to be applied in all member states. Most of the directives are designed to prevent air and water pollution and encourage waste disposal. Other major issues include nature conservation and the supervision of dangerous industrial processes.

These are some examples for environmental policy instruments, which have been drawn up at the European level and been implemented in the EU member states:

- Emission standards for vehicles (1970/2001): Vehicles are classified into categories and targets for the car-fleet are set up (Directive 2001/116/EC amending Directive 70/156/EEC);
- Environmental Impact Assessment (EIA) (1985/1997): The impact on the environment of public and private projects from a certain significance has to be assessed in advance in order to prevent negative impacts from these projects on the environment (Directive 1997/11/EC amending Directive 85/337/EEC);
- Eco-labelling (2000): A Community eco-label has been developed that shall promote products which have a reduced environmental impact compared with other products of the same product group (European Community 2000);
- European Climate Change Programme (2000): This programme supports the implementation of the EU's target under the Kyoto-Protocol which aims at cutting its greenhouse gas emissions by eight percent until 2012. The most important measure under this programme is an Europe wide emissions trading scheme which has been implemented from 2005 on (European Commission 2000);
- Community system of environmental management and auditing (EMAS) (2001): The objective of EMAS is to promote improvements in the environmental performance of organisations in all sectors through the introduction and implementation of environmental management schemes (European Community 2001);
- Strategic Environmental Assessment (SEA) (2001): The impact on the environment of plans and programmes from a certain significance has to be assessed in advance in order to reduce impacts from these projects on the environment (Directive 2001/42/EC).
- Energy Tax (2004): The Energy Tax Directive (2003/96/EC) has come into force not until May 2004. The Community system of minimum rates, which for a long time was confined to mineral oils, is extended to coal, natural gas and electricity. This system sets the minimum rates of taxation applicable to energy products when used as motor or heating fuels and to electricity.

- European Union Greenhouse Gas Emission Trading Scheme (EU ETS) (2005): The scheme is based on a directive that is adopted in October 2003 (Directive 2003/87/EC) aiming to implement the target set in the Kyoto-Protocol. With a fixed limit of their annual CO_2 emissions, companies could either reduce their CO_2 emissions and sell their "allowances" or have to buy them due to their poor performance in CO_2 emissions reduction.

In this context, the development of voluntary approaches can be interpreted as a contribution to the limits of conventional policy instruments in the field of regulation and command-and-control. Together with other new modes of governance, like framework directives that are open for flexible implementation, or public schemes like the EMAS-system (that extends the ISO 14001 procedure), voluntary agreements are an instrument to address policy issues in which conventional regulation is limited. Limitation can be interpreted in two ways:

Firstly, new challenging environmental problems like climate change cannot be addressed by end-of-pipe technologies. In addition, these problems require a wide field of measures and coordinated action in a range of actors. Sectors like industry, transport, agriculture or energy must be matched with each other. Secondly, in order to achieve such a broad approach more flexible and joint action between all parts of the society is needed. Long-lasting policy processes and conflicts between environmental and industrial interests might counteract an efficient problem solving.

Voluntary agreements are only one part of this widening of instruments. In most cases in Europe they do not replace regulation but extend environmental thinking to new areas. Thus, the new modes of governance exist side by side to regulation and economic instruments like energy taxes and emissions trading. In Europe, most of the cases of voluntary agreements are embedded in a policy mix. This mix can be interpreted as a strategic and multi-fold approach to the integration of environmental objectives in other policy areas.

Furthermore, it has to be considered that even after nearly 50 years of integration each member state still has a particular institutional setting. All nations are democracies with highly evolved and heterogeneous policies and differing policy cultures. While e.g. Germany is a federal nation state with strong regional governments, France and Great Britain are highly centralised. In environmental policy, some countries can be described as forerunners (e.g. Scandinavian countries and the Netherlands) whereas other countries can be characterised as laggards (e.g. south and east European countries). Variation in the policy culture like consensus orientated (e.g. the Netherlands) or more hierarchical cultures (e.g. Germany or Italy) are important as well. More differences exists in aspects like corporatist structures representing the relations between business and labour interest associations and the government which are more or less developed in EU member states.

Generally speaking, the countries differ in various matters. Hence, the use of voluntary agreements is quite heterogeneous. An analysis of the emergence of voluntary agreements must keep in mind the diverse institutional settings and legal systems. Hence, the transfer to other countries like China must consider possible restrictions of the legal system. Nevertheless, it is possible to learn from good and bad practice aspects of European experiences. But for adopting instruments it is crucial to analyse which feature will be important in the target country. Therefore, the approach of carrying out a comparative study is a comprehensive but necessary task of the project. Furthermore, also further links to the Kyoto targets of industrial countries and possible supporting measures through the Clean Development Mechanisms (CDM) should be addressed.

3 Voluntary agreements in Europe

There is a high number of voluntary approaches in the European Union and one can look back on more than 30 years of practice. This paper concentrates on experiences in the EU. Experiences from outside the EU like Canada or Japan, where a high number of voluntary agreements has been concluded as well, are not covered by this study. However, before analysing some examples of voluntary approaches more in detail, it is necessary to introduce some general definitions and categories.

3.1 The range of voluntary agreements

Even if voluntary approaches have been part of the policy mix in Europe at least since the 1970s, the raise of its use, its presentation as a governance concept as well as its growing importance occurs relatively recent. Starting point for environmental agreements was the will to find solutions for concrete environmental problems, in which cases regulation or economic instruments did not work properly or political support was too weak for implementation. For that reason, public authorities and industry began to try to find other ways of policy-making in order to solve environmental problems. Hence, voluntary agreements are an example for a "new mode" of governance.

3.1.1 Two types of agreements

An opportunity to put the instrument of voluntary approaches in more concrete terms is the categorisation proposed by the OECD. Due to the different involvement of stakeholders, two main types of voluntary agreements can be distinguished (OECD 2003: 18 f.):[1]

- Unilateral commitments made by industry
  This form of voluntary approach consists of a unilateral commitment by a firm or industry to voluntarily abate pollution or tackle another environmental problem. The definition of environmental targets and the provisions how to reach this target is determined by industry. These commitments consist of environmental programmes that are communicated to employees, clients, and the public or public authorities.

- Agreements negotiated between industry and public authorities
  Agreements can be defined as a commitment or contract for environmental protection that is developed by bargaining between industry and public

[1] The OECD names two further types of voluntary approaches: private agreements achieved through direct bargaining between polluters and pollutes and public programmes in which companies can take part voluntarily. These cases of voluntary approaches are not covered by this study because there aren't any negotiations between a public authority and industry.

authorities (at local, regional, federal or national level). Thus, interaction between industry and public authorities is rather high, especially compared to other forms of voluntary approaches. At the end of the negotiation process, contracts or letters between the public authority and industry are signed; usually containing environmental targets for industry as well as a timetable to achieve them. On the other hand, the public authorities commit not to introduce a new piece of legislation (e.g. a tax) if the targets of the agreement are fulfilled by industry.

This study covers the wide range between self-regulation where industry takes action voluntarily and conventional regulation or public programmes where public authorities decide what kind of action has to be taken by industry. The focus lays on agreements, but cases of self-regulation or unilateral commitments are considered in this study as well if interaction or negotiations with public authorities have taken place. Pure self-regulation seldom emerges without public pressure and "the shadow of hierarchy". This term stands for the threat that public authorities would use regulation in case of failure.

In most of the cases, agreements are contracts between a public body and a sector organisation of industry or individual companies, setting collective pollution abatement targets (Börkey et al 2000: 39). In other cases, the outcome of the agreement is an open letter or commitment of industry accepted by the public authority by an answer or press release.

Furthermore, there is a central difference regarding the scale of the policy instrument. It must be distinguished between two levels of voluntary agreements: agreement schemes and single agreements (Krämer, Hansen 1999).

- *Agreement schemes* are used as a policy instrument. Such a scheme is a part of the national environmental policy and can be seen as a framework for specific voluntary agreements with sector associations. Examples for agreement schemes are the Dutch Long Term Agreements or the German Declaration of Industry on Global Warming Prevention.
- *Single voluntary agreements* are either concluded with an industrial sector association or individual companies. These agreements can be part of an agreement scheme (e.g. the Dutch benchmarking covenant) or exist independently (e.g. in the Czech case on detergents or the German phase-out example) (see chapter 4).

Independently from the form they take, voluntary agreements in the EU can have a support function that means that these agreements add on existing legislation (e.g. existing limits or taxes) or a transition function. In this case, voluntary agreements are concluded at a preliminary stage of a legislative process to allow quick action. A third possibility is an independent function of voluntary agree-

ments in cases where they are fully replacing regulation and used as an independent environmental policy instrument.

3.1.2 Relation to conventional policy instruments

In the context of defining the boundaries of voluntary agreements, Mol et al. (2000) propose the two aspects of jointness and voluntariness. The aspect of jointness is defined as the extent to which policies are formulated and implemented jointly between public authorities and industry. You can find a continuum between high public-private interaction and low public-private interaction (see figure 1). The aspect of voluntariness can be measured on a continuum between obligatory (command-and-control policies) and voluntary (self-regulation). These two criteria allow classifying policies into four categories. While a low degree of jointness and a low degree of voluntariness leads to conventional command-and-control regulation, a rather high degree of jointness and voluntariness indicates voluntary agreements.

Figure 1: Classification of environmental policy instruments

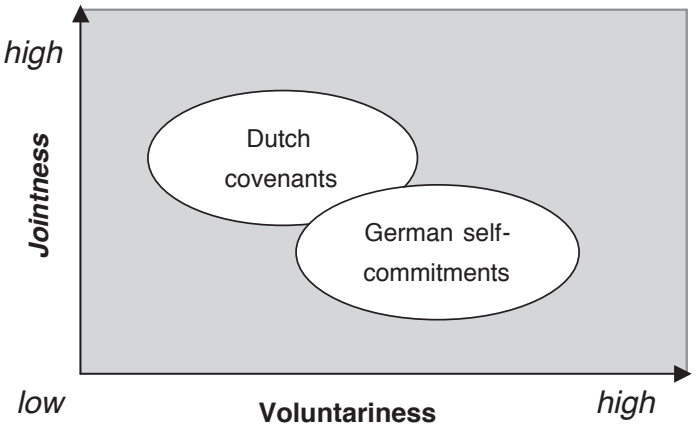
		Voluntariness	
		Low	*High*
Jointness	*Low*	Command-and-control regulation as well as economic instruments	Self-regulation
	High	(Co-)Regulation by consensus-seeking	Voluntary agreements

Source: adapted from Mol et al. 2000

The two dimensions of voluntariness and jointness can also be used to explain variation of voluntary agreements, which are situated within the lower right side quadrant of Figure 1.

The Dutch covenants for example imply a high level of interaction between public authorities and industry on the one hand and contain on the other hand legally binding sanctions, which means that voluntariness is less pronounced. In the case of German self-commitments, the voluntary element predominates: they are usually legally not binding and the only sanctioning mechanism is a threat of legislation by public authorities. Regarding jointness, the commitments are less developed as industry is the main actor. There are only a few meetings and no formal contract is signed. Figure 2 illustrates these two dimensions of agreements.

Figure 2: Dimensions of agreements



Source: Wuppertal Institute

3.1.3 Additional characteristics

Together with basic aspects of voluntary agreements like diverse sectors, policy issues and spatial foci (from local to global voluntary agreements), there are at least five dimensions that can be useful to understand special features and shed light on further characteristics of voluntary agreements (Börkey et al. 2000: 11 f.):

- Product versus process oriented:
  Whereas process oriented approaches aim at improving production processes (e.g. at the reduction of emissions which damage the environment), product oriented voluntary agreements aim at the product at the end of the production process. They have the target to improve the environmental performance of a product. An example could be more environmental friendly cars using less gasoline and being built of recyclable material.

- Target-based versus implementation based:
  Voluntary agreements can either set pollution abatement targets or the implementation procedure how to achieve them. If the parties involved negotiate the target it is called target-based. If the pollution abatement target has been set previously (e.g. in the framework of the regular legislative process by government) the agreement is called implementation based. Its aim is the implementation of the existing pollution abatement target (EEA 1997).

- Binding versus non-binding:
  The legal form of a voluntary agreement has considerable implications on its outcome. An agreement can be considered to be legally binding, when it includes sanctions in case of non-compliance and is enforceable though a court's decision. It depends on the national legal system whether the government is allowed to sign a contract with industry.

- Individual versus collective liability:
  This criterion underlines the fact that voluntary agreements can be either concluded with single firms or a sector association or group of firms. In case of collective liability, industry or an industry sector is collectively liable for the implementation of the agreement and will be sanctioned collectively in case of failure. Free riding can be limited in case of an individual agreement as the performance of all participating companies is controlled.

- Open versus closed access to third parties:
  Voluntary approaches do not necessarily involve third parties, as they are not part of the legislative process. But community organisations or environmental groups play an increasing role in voluntary approaches.

As shown in this chapter the range of experiences with voluntary agreements in Europe is quite large. Between the two poles of voluntary commitments and voluntary agreements as legally binding contracts, a variety of problems are addressed in numerous ways. Voluntary agreements are as multi-fold as conventional regulation. Possible examples and case studies come from different sectors and countries.

3.2 Chances and risks of the instrument

During the last decades, environmental problems have changed. The example of climate change shows that they are highly complex. Other issues, like the damages of many forests (the "Waldsterben"), have shown to be persistent, which means that political attempts to solve them have failed or not shown the intended effects (Jänicke, Jörgens 2003). These complex and persisting problems set limits to traditional regulation and end-of-pipe-technologies and challenge environmental governance. They have to be tackled by encompassing strategies, as interdependences with other areas, e.g. the economy occurs very often. In this context, new forms of governance, such as voluntary agreements can be a chance. However, some risks related to this form of governance have to be considered as well.[2]

Chances of voluntary agreements

Voluntary agreements help to find an access to environmental problems which are complex and hence not easily to tackle via regulation. Especially in the case of complex environmental problems that involve many actors, it can be useful to design a voluntary agreement. In this agreement, the public authority and industry can exchange their knowledge according to the problem and can jointly develop policies adjusted to the complex environmental problem. The voluntary agreement can build on business's particular knowledge of its own capacity to address environmental problems and respond to particular requirements of the local level

[2] For an overview see De Clercq/ Suck 2003: 12 f. and ten Brink 2002: 16 f.

(and hence bridge the gap between national legislation and local needs) (ten Brink 2002: 16).

Another positive argument is the high flexibility in the implementation of voluntary agreements and hence cost-efficiency for firms in realising the environmental targets agreed upon. The OECD (2003: 14) believes that voluntary agreements are more cost-efficient than command-and-control regulation[3]. An agreement will be the more cost-efficient the more flexibility it gives to implementation so that abatement can be carried out in the companies or plants where the abatement costs are significantly low. It depends on the design of the voluntary agreement whether enough flexibility is granted to firms (Börkey et al. 2000: 72).

Furthermore, there are a lot of soft effects, which can be attributed to voluntary agreements: E.g. they foster the dissemination of information between participating firms. As the agreement would demand the participating firms to tackle a specific environmental target they would exchange information on environmentally sound technologies in order to better reach the agreement. This exchange would not have taken place in case of the absence of an agreement. That is why innovation is encouraged through cooperation between firms. In this context, some authors have examined the potential of organisational learning within voluntary agreements (Ramesohl, Kristof 2002).

Another soft effect is the opportunity to create environmental consciousness within firms and a greater appreciation of environmental issues in industry. As a consequence of the voluntary agreement, firms have to tackle environmental damage voluntarily within their own possibilities. They can realize that environmental protection is not only connected with additional costs (as it is often the case with environmental regulation), but can also have benefits: they can improve their environmental image vis-à-vis the public and hence increase their sales to green consumers. Moreover, a firm can save inputs as pollution abatement may lead to a better use of resources (Börkey 2000: 16). Energy saving is a typical example: if a firm uses less energy, it can save money and protect the environment at the same time. This is called no-regrets-action or win-win-situation. Prior to the agreement, information on the use of clean technology or other energy saving methods would not have spread among the firms.

[3] According to a study of the OECD in 2003, the economic efficiency of voluntary agreements has generally turned out lower than expected, as abatement targets are set at the sectoral and not at the national level which means that flexibility is not sufficient. But compared to command-and-control-regulation, it is higher providing at least some flexibility in how the environmental improvements are to be accomplished (OECD 2003: 14).

Risks of voluntary agreements

The biggest concern with voluntary agreements is called regulatory capture. In some cases there is a strong incentive for industry to influence the outcome of voluntary agreement in its own interest. If it succeeds, it leads to weak measures. Börkey et al. (2000: 19) give a definition of this phenomenon: "A voluntary approach will be considered as being captured by industry when the environmental target set is no more than the abatement associated with a business-as-usual pattern." When the environmental objective of the voluntary approach is close to the business-as-usual scenario this can be called regulatory capture. The consequences of regulatory capture may be poor environmental performance of the agreement.[4]

One aspect is the link to information. If the voluntary agreement shall be effective, the government will have to collect information about the environmental problem, about abatement strategies and about costs evolving for industry. It is dependent on industry, which can provide necessary information about e.g. the feasibility of certain abatement strategies. Companies tend to act in a selfish manner, which means that they tend to underestimate the consequences of pollution and to overestimate the abatement costs in order to save resources.

Another issue is the question of legitimacy: In most of the cases, voluntary agreements are negotiated between public authorities and industry. Third parties like NGOs, Parliaments, local communities or research institutes are usually not involved in the negotiation process. Without participation, the voluntary agreement runs the risk of being captured. The different stakeholders could function as a kind of "watchdog" and ensure that ambitious targets are set in the agreement. Such a lack of transparency in case of nonexisting participation of third parties can lead to criticism by the public and the credibility of the agreement can be undermined.

Another risk is to encourage free riding. It occurs when one or more parties to the agreement refrain from taking action agreed upon in the agreement. These firms can take advantage of the commercial benefits arising from doing nothing whilst the other participating firms are facing economic costs in taking action in order to achieve the targets set down by the voluntary agreement (EEA 1997: 43). This kind of behaviour especially occurs when a high number of participating companies and collective compliance (instead of individual compliance) is included so that non-compliance of single firms is not easily detected.

[4] A more general problem – in-built in the design of negotiations between government and industry actors – exists in the case if the public authority itself would not have strong interests in tough environmental solutions but want to moderate public concerns. The public authority could initiate a voluntary agreement to circumvent other action and stop discussion. In this case, the agreement could be easily captured by industry, as government would not have any interest in a too strong agreement.

The cost-effectiveness of agreements is often ambivalent. Usually, it is assumed that voluntary agreements have low transaction and administration costs. But if too many partners take part in the negotiations, it becomes more difficult to reach an agreement. In this case the transaction costs increase because it takes more time to collect all the relevant information and to agree on a common position. Some negotiations have turned out as lengthy and troublesome and have slowed down the process of policy making. In addition, monitoring can turn out quite costly as well.

Therefore, it is important to examine possible chances and risks of a voluntary agreement in advance and to develop the design of the agreement carefully.

3.3 The use of voluntary agreements in the EU

The use of voluntary agreements varies considerably. Therefore, an overview about the practice in the European Union and its member states is given. The aim is to provide some patterns concerning the geographical location, the economic sector as well as the environmental issue affected.

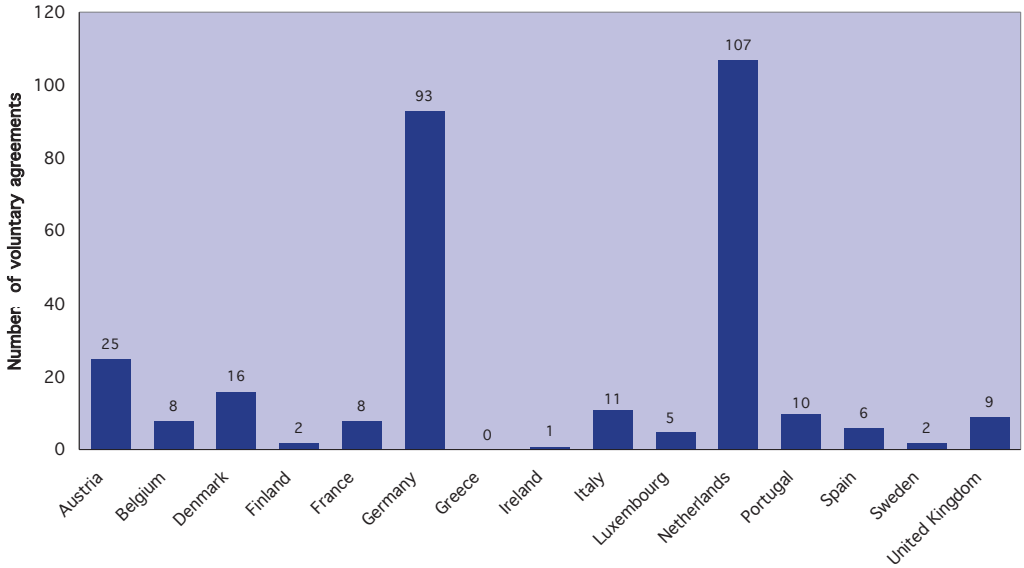
Since a study of 1996 (European Commission 1997a, 1997b) no systematic data-collection was carried out. Review chapter in other studies are all based on the 1996 data. As most of the member states as well as the European Commission do not have an inventory of voluntary agreements, no current information about the geographical and sectoral distribution is available. Nevertheless, an internet investigation as well as contacts with ministries and industry associations provided additional data about recent trends and developments.

3.3.1 Brief chronology

Since the beginning of the 1990s the use of voluntary agreements has become more common in almost every member state of the European Union. A huge proliferation of voluntary agreements with a number of 305 at the national level (up to 1996) has been taken place[5]. The total amount of voluntary agreements in 1995 nearly equals the sum of voluntary agreements issued between 1986 and 1990 (DeClercq 2001). Over the past eight years, it is supposed that there are a lot of agreements to be added to. After 1996, the year of European wide inventory of voluntary agreements realised by the European Commission, Germany for example concluded round about 37 additional agreements until 2003 (BDI 2003).

[5] All data on the number of agreements (in all EU member countries) used in the existing study refers to the inventory from the European Commission in 1996 (EC 1997). But even this information shows some problems as the criteria for definition as voluntary agreement as well as the information base is sometimes problematically. Nevertheless, the number gives a good insight in the development of this approach.

Figure 3: Distribution of voluntary agreements in the EU-15 in 1996



n = 305

Source: European Commission 1997

Germany and the Netherlands account for two thirds of the concluded agreements. While voluntary agreements in the Netherlands represent the "independent type", i.e. fully replacing other policies, the German agreements belong (like most agreements in the rest of the EU) to the "supporting or transition type" (see chapter 3.1).

The first voluntary agreements were implemented in France (1971) and the United Kingdom (1972). Whatsoever, the 1970s could not be labelled as the decade of voluntary agreements but most of the European countries detected voluntary agreements as a useful tool for environmental policy in the 1980s. The majority of the European states introduced this approach on several administrative levels: the national, the regional as well as the local one.

3.3.2 Distribution among sectors and policy issues

Voluntary agreements establish targets for specific products, for production processes or for other processes such as recovery and recycling. They could be categorized according to their legal status: Apart from the Netherlands where 90 percent of the agreements are legally binding, in the other member countries non-binding agreements are the dominant form. Furthermore, the use of voluntary agreements varies from country to country and from sector to sector. But the instrument is not limited to these categories: There are multi-sector agreements and multi-issue agreements. Some of these patterns will be described in more detail.

The voluntary agreements concluded in the EU member states are related to different sectors. The industry and the energy sector are the most important ones; agriculture and tourism are less important. On closer examination within the sectors, it is to observe that almost one third of all agreements in the European Union are concluded in the chemical industry, followed by the manufacture of food products, accounting for twelve percent.

All European states get involved with measures that contribute to the abatement of industrial pollution. But also the energy sector is a field of great interest concerning the implementation of environmental voluntary approaches: Eight of 15 member states, i.e. more than 50 percent, have concluded agreements in this sector (EEA 1997).

Waste management, air pollution, climate change, water pollution, ozone depletion and soil contamination are the most important environmental issues for voluntary agreements in the European Union: Waste management is subject to voluntary agreements in nearly every country of the European Union. This policy field owes its Europe-wide attention the great technological uncertainty that prevailed when these problems were first addressed. The governments were unsure how to meet these challenges and needed close cooperation with the industry to develop realistic goals. Also in case of choosing the total number of voluntary agreements as reference level, waste management (ca. 82) and climate protection (ca. 77) are the most important policy fields. Agreements on pollution abatement emerge in the categories air, water and soil and mount up to ca. 70 in number (EEA 1997). Furthermore, a couple of voluntary agreements are related to a range of issues, even if they account for a smaller number (DeClercq 2001).

3.3.3 Trends of development

As mentioned in the previous chapter, the 1990s were a boom period for voluntary agreements as the number increased significantly during this time. Many studies and projects have been conducted at the end of the 1990s and have shed light on the development of voluntary agreements at that time (European Commission 1997a, 1997b,). One part of these voluntary agreements continued to exist until the beginning of 2000 or beyond and others have been further developed. Furthermore, new voluntary agreements have been set up since then, which differ from the traditional voluntary agreements from the end of the 1980s and beginning of the 1990s.

The voluntary agreements or commitments during the 1980s and early 1990s were mainly concerned with the topics of pollution abatement or phase-out of dangerous substances. Examples for this type are the agreements to reduce SO_2 and NO_X emissions in Germany, the Netherlands and Belgium in order to limit the environmental problem of acidification. Another example for more traditional voluntary agreements are agreements concerning the problem of waste and recyc-

ling such as the separate collecting of batteries (Belgium) or the recycling of end-of-life vehicles (France and Germany) which were concluded in the mid-1990s.

Today, the content of many voluntary agreements has changed. Very often, they are more concerned with qualitative goals. This can be demonstrated with the Long Term Agreements on energy efficiency in the Netherlands. The first phase of Long Term Agreements (1990–2000) set quantitative targets for energy efficiency whereas the second phase for Long Term Agreements (2000-2010) puts a focus on qualitative targets as the development of energy management, energy efficient product development and renewable energy (Nuijen; Booij 2002). For energy efficient industries, a totally new approach has been developed: the benchmarking covenant on energy efficiency (see case study in chapter 4.2).

In Germany, a shift from phase-out and reduction agreements to more complex agreements has taken place. Examples are the environmental pacts that have been concluded at the federal state level and which aim very often at the implementation of environmental management schemes as EMAS or ISO 14001 (BDI 2003).

An environmental problem that demonstrates the development of voluntary agreements is the issue of climate change. From the early to the mid 1990s, unilateral commitments such as the commitment by the German automotive industry to reduce fuel consumption of cars by 25 percent (1990) or the German declaration of industry on global warming prevention (1995) prevailed. They partly continue to exist as the former has being updated in 1995 and the latter has been updated twice in 1996 and 2000. Besides the Dutch and the German declaration further examples of the subject climate change are the British climate change agreements and the Austrian Kyoto Cooperation and Initiative for Climate Policy (see Ökobüro 2004).

These examples show that voluntary agreements are still an important policy option in the field of climate change. The context of international climate policy and the legally binding targets on CO_2 emission for each EU member state were a strong driver for that. However, the new instrument of EU-wide emission trading will probably have effects on these voluntary agreements, as it obliges industry to reduce CO_2 emissions; at least if it does not want to pay for CO_2 allowances in the future. In Germany, emission trading will probably become more important than the industry's commitment and will replace it to certain extents. In contrast to that, in the Netherlands, emission trading is a supplement to the voluntary benchmarking covenant on energy efficiency (s. chapter 4.2) and serves as a framing option.

To date, a rather limited number of agreements have been concluded at the European level. Most of them also deal with climate change. Examples are the ACEA-agreement (European Automobile Manufacturers Association) focussing on the reduction of CO_2 emissions from passenger cars released in 2002 and EACEM-agreement on Reduction of Standby Power for televisions and video recorders (1997) dealing with the reduction of energy consumption of these products.

Already in its Fifth Environmental Action Programme (5th EAP) from 1992 the European Commission has called for a broad mix of instruments to be applied in environmental policy. Voluntary environmental agreements explicitly complement this mix. In 1996, the European Commission published a first communication on the issue of environmental agreements (EC 1996). Subjects of the first impartation were of textual nature and about how to implement guidelines through environmental agreements in the member states. In the context of the action plan "Simplifying and Improving the Regulatory Environment" a follow-up communication on environmental agreements from 2002 deals with the question how to use environmental agreements on the community level (EC 2002). Thereby, this communication puts a focus on a future framework. Furthermore, several environmental issues are identified for the development of voluntary agreements: PVC, Integrated Product Policy, waste management and climate change. Besides unilateral commitments, the Commission would also like to push voluntary agreements as a means of implementation in the framework of legal acts (co-regulation).

Generally speaking, voluntary agreements in Europe develop further on. Not only in the "old" member states, but also in the states that joined the EU in spring 2004 voluntary agreements have been already adopted. For laundry detergents, agreements in Poland and the Czech Republic (see chapter 4) have been conducted. However, these countries still have to adopt a high number of EU regulations and directives.

More and more directives in the European Union take the form of framework directives that leave more room for implementation. There are already some examples (e.g. in waste and packaging sector) that voluntary agreements can serve for implementation of European directives. If this trend is going on, voluntary agreements will evolve towards an element of co-regulation. That means that laws and agreements concerning the same issue are developed side-by-side in order to benefit from both of the advantages. A recent example for such a scheme is the German nuclear-power phase-out process. Thereby, a regulation describing the time horizon and the intermediate targets is accompanied by a voluntary commitment of the electricity producing industry to phase out their power plants step by step with certain flexibility.

4 Case studies: Evaluation of European experiences

As shown in the previous chapter, the range of experiences in Europe is quite large. Between the two poles of entirely voluntary commitments and conventional regulation, a variety of problems are addressed in a variety of negotiated commitments and agreements between public and private actors. Examples and case studies come from different sectors and countries. In addition, the object of the agreement can be the design of products as well as the production process. The environmental issue addressed varies considerably. Thus, voluntary agreements in the European Union are as multi-fold as other policies as well.

To give a more detailed picture of the structure and processes of voluntary environmental agreements, four different case studies are presented in the following paragraphs. Within these examples, the focus of analysis lays on success factors. Thereby, learning is possible on successful as well as on failed examples. However, to present good practice offers a much more constructive approach to show and prescribe how voluntary agreements work successfully. Thus, relatively successful examples are chosen, but the risks and less positive aspects are reflected, too. At the end of the chapter a comparative analysis provides success factors and a general conclusion regarding the context.

4.1 Methodology

The selection of cases is a challenging task. Hence, concrete selection criteria must be developed. Along these criteria a screening of several cases is necessary. This study is focusing on relatively successful agreements. Thereby, it has to be taken into account that a selection of the "best" examples is rather difficult. Defining success highly depends on the perspective, because conflicting political objectives have to be considered. In addition, the variety of policy issues does not allow a ranking of cases. As a consequence, this study is presenting exemplary cases that cover a range of possible areas. Thereby, the aspect of transferability to the Chinese situation is taken into consideration.

4.1.1 Selection of cases

To choose successful and interesting cases, it is necessary to take a closer look at European experiences. Because of the high number of voluntary agreements and commitments as well as the heterogeneous field, the collection of information about possible case studies is important. However, not only appropriate information, but also criteria to structure and assess the collected information are needed as well.

Selection criteria

Three principles are crucial for defining selection criteria:

1. Firstly, the cases should represent good practices in order to show the benefits and crucial aspects within the field of voluntary agreements. Thereby, the label "successful" does not only concern the environmental outcome, but the procedures and the conditions leading to the positive appraisal, too.
2. Secondly, the aim of the project to transfer experiences and develop a model for China and the City of Nanjing must be acknowledged. Hence, it is necessary to provide a range of examples concerning several characteristics of voluntary agreements.
3. Thirdly, the recent most vital environmental problems in China have to taken into account. Therefore, not only complex problems like climate change but also pollution abatement and hazardous substances are of interest. In Europe, these kinds of problems were mostly discussed in the 1970s and 1980s, even if some of them are still on the agenda. Thus, "old" examples are also relevant.

The first group of criteria regard the definition as "successful". Thus, the "performance-oriented criteria" are based on a variety of aspects derived from literature (e.g. EEA 1997, EC 1996). To identify a good performance, the following points are crucial:[6]

- Improvement of the environment
- Occasion of soft effects
- Existence of quantified and ambitious targets
- Existence of a monitoring system
- Compliance-supporting framing (like integration in a policy mix)
- Cost-effectiveness
- Legitimacy of agreed objectives

In addition to these performance-oriented criteria, the documentation of a wide range with several relations to the Chinese situation is necessary. Therefore, "additional selection criteria" include:

- An appropriate range between the poles self-regulation and regulation (see chap. 3);
- A variety of product- as well as process-related agreements;
- A range of environmental issues;
- A range in the sectoral distribution; and
- A range of different contexts.

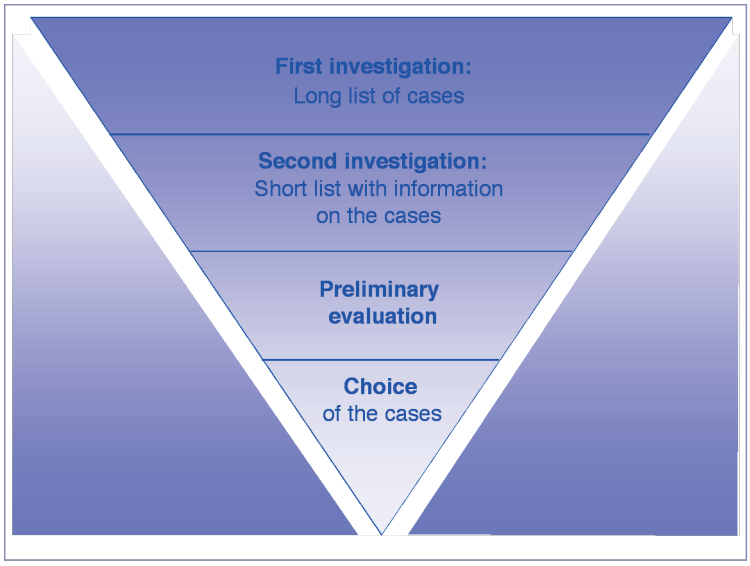
6 A detailed description of the aspects is given in the presentation of the evaluation criteria (presented below in chapter 4.1.2). Evaluation criteria are designed to identify a good performance.

Selection procedure

Due to the variety of different aspects, the choice of cases constitutes a complex task. To come to a reasonable selection, a logical step-by-step method was developed (see Figure 4). The selection-process is divided in four steps:

1. A first enquiry in European Union member states provides a long-list with agreements. Therein, the title, the sector, the time horizon and additional aspects are depicted.
2. A second investigation in the Internet and scientific publications - on cases selected from the first enquiry – provides a short-list containing agreements for which further and more detailed information is available. As for the selection, no comprehensive gathering of additional information, e.g. with interviews, was foreseen, this step must have been based on a literature review.
3. The third step is the screening concerning the seven performance-oriented criteria (see chapter 4.1.2). To reduce complexity, only cases representing good practice in at least three features were chosen. Thus, a variety of cases and a list with relative successful agreement were given.
4. Based on the good practice list, the choice of cases was possible. Thereby, the remaining "additional selection criteria" were used.

Figure 4: Case study selection procedure



Source: Wuppertal Institute

Rationale of selected cases

After the preliminary evaluation, the choice of the cases was based on the additional selection criteria. The task was to find a range of cases that could enable learning and give a picture of different possible forms voluntary agreement could take. Under this condition, the decision for one particular case influences

the conditions for the choice of the others. Thus, the selection was inter-related and iterative. The final choice resulted in:

- The Dutch Long Term Agreements on energy efficiency and the benchmarking covenant;
- The ACEA-agreement between the European Automobile Manufacturers Association (ACEA) and the European Commission on the reduction of CO_2 emissions from the European car-fleet;
- The Czech agreement on gradual reduction of impact of laundry detergents on the environment;
- The German commitment on phasing out of polybrominated diphenylethers (PBDE) as flame retardant in synthetic materials.

Starting point was the decision for a Dutch agreement scheme related to the system of Long Term Agreements and in the follow up "benchmarking covenants on energy efficiency". As specific case, the sector of breweries was chosen. The LTA is among the most elaborated agreement schemes in Europe and the benchmarking covenant represents the latest invention of pushing Dutch companies to become "the best in the world" in energy efficiency. Especially the strong relation to framing an agreement by other policy-instruments can only be observed in very few other cases in Europe.

The ACEA-agreement was chosen because of the good performance in targets, monitoring and effects. Like the Dutch case, it is also related to energy efficiency. But there are two crucial differences: Firstly, it is a product-related agreement and secondly, it consists of two parts, which are a negotiated commitment and an official response in form of a communication of the Commission.

Due to the focus to energy efficiency (and hence the environmental issue of climate change) of the first two cases, the other two examples are chosen from the field of pollution abatement. Concerning this topic, the chemical sector is one of the most important areas for voluntary approaches. Within the sector, agreements concerning emission reduction or phase-out of harmful substances could be seen as having a high relevance for the Chinese situation. Again it is differentiated between a product and a process-related agreement.

The third case is like the ACEA-agreement dealing with a product-related voluntary environmental agreement, the reduction of phosphates in laundry detergents. Regarding the environmental effects, the agreement was supposed to contribute to a significant change in water pollution in the Czech Republic. This case is chosen not only because of the good practice in effects, monitoring costs and legitimacy, but also due to a possible transferability to China and the importance of the chemical sector for voluntary environmental agreements.

The German commitment on phasing out of polybrominated diphenylethers (PBDE) as flame retardants in synthetic materials is dealing with production processes. Even if it is an earlier example, it demonstrates a more self-regulated (German-style) way of addressing an environmental problem. It is located in the plastic-producing industry that has many connections to the chemical sector.

Generally speaking, the selection presents a good overview concerning different fields as well as different approaches (see Table 1).

Table 1: Characteristics of selected case-studies related to additional selection criteria

Additional selection criteria	**Dutch LTA / benchmarking covenant**	**ACEA-agreement**	**Czech agreement on phosphates in detergents**	**German phase-out agreement on PBDE as flame retardant**
Variety of product- as well as process-related agreements	Process-related	Product-related	Product-related	Process-related
Range of environmental issues	Climate change	Climate change	Pollution abatement	Pollution abatement
Range in the sectoral distribution	All sectors (food industry)	Transport (manufacturing)	Chemical and detergent industry	Chemical and plastic producing industry
Appropriate range between self-regulation and regulation	Agreement with strong framing	Negotiated and agreed commitment	Agreement resulting in contract	Negotiated and agreed commitment

Source: Wuppertal Institute

4.1.2 Methodology for evaluation

Starting point for the definition of criteria that allow a structured evaluation of voluntary agreements can be the communications of the European Commission prepared in 1996 and updated in 2002. These non-binding texts are based on research projects concerning the use of voluntary agreements as well as on practical experiences gathered so far. In addition, several other studies were screened (e.g. EEA 1997, OECD 1999, Krarup/ Ramesohl 2000, ten Brink 2002)).

Seven core-aspects represent the variety of arguments and recommendations in literature:

- Environmental effects (measurable improvements of the environment);
- Soft effects (awareness, learning and innovation pressure);

- Targets (specific definition of objectives to be reached);
- Monitoring (evaluation and control of results);
- Framing (incentives and sanctions as well as integration in a policy mix);
- Costs (related costs); and
- Legitimacy (democratic procedures and politically agreed objectives).

Similar categories were used in the selection process. However, these core-elements are very heterogeneous. Different levels and aspects are incorporated, as targets are a precondition to gain environmental effects. There are only very few attempts to find a more appropriate framework (e.g. DeClerq 2002). Evaluation criteria gather ultimate, instrumental and soft objectives that are partly related to requirements at the procedure and partly addressing social and political values. To find a solution, a more structured view could be useful.

In political science (e.g. Mayntz, Scharpf 1995), the evaluation of policy instruments is mainly based on two categories: problem solving capacity and legitimacy. In addition, economists refer to the cost-effectiveness of measures. These three evaluation dimensions are used in the case studies. However, the problem solving dimension is highlighted, as the environmental effectiveness is the focus of the research project.

A voluntary agreement in the field of environmental policy has a high problem solving capacity if it contributes significantly to the improvement of the environmental situation compared to the business-as-usual trend. Due to a lack of relevant information on environmental data and because the real impact of a policy measure on the environmental situation is very difficult to measure, it is assumed that three factors lead to positive environmental effects: ambitious targets, compliance with these targets and soft effects that promote policy learning and environmental awareness. The four selected case studies will be analysed towards these categories (see Table 2).

Table 2: Factors contributing to the success of a voluntary agreement

Evaluation criteria	**Sub-aspects**
Problem solving capacity (Environmental effectiveness)	Ambitious targets leading to an improvement of the environmental situation Compliance with agreed objectives Long term soft effects as policy learning and environmental awareness
Legitimacy	Broad acceptance in society
Costs	Cost-effectiveness of voluntary agreement

Source: Wuppertal Institute

4.2 Case study 1: The Long Term Agreements on energy efficiency and the benchmarking covenant (The Netherlands)

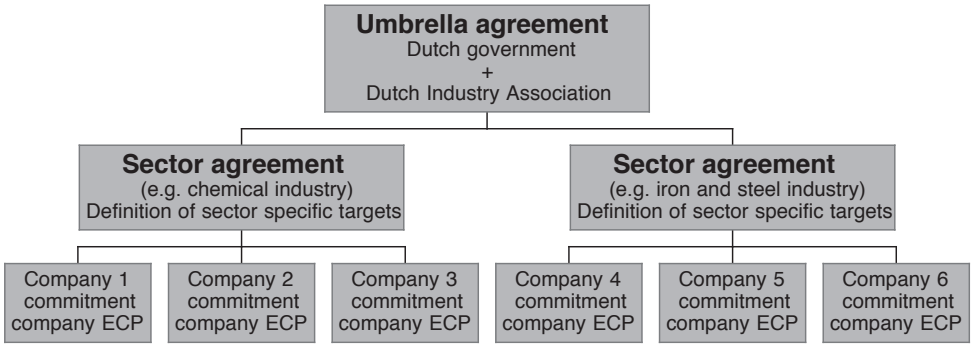
The Dutch Long Term Agreements or "covenants" are a very comprehensive system of voluntary agreements that can be understood as a specific policy approach. It was developed in the beginning of the 1990s. Even if the approach was also applied to other problems like waste, the LTAs on energy efficiency are the most prominent example. These agreements are based on the will of the Dutch state to address the problem of climate change in cooperation with energy-intensive industry. The most recent development is the so-called "benchmarking covenant" that can be seen as the second phase. This case study describes the Long Term Agreements and benchmarking approach in general and evaluates it at the example of breweries in particular.

4.2.1 The first generation Long Term Agreements

The Long Term Agreements on energy efficiency were signed at the beginning of the 1990s. They have become the major policy instrument for energy conservation and industrial CO_2 emissions reductions. The goals for the Dutch climate policy are laid down in the National Environmental Policy Plan (NEPP) from 1989 and 1990. As only outputs and emissions or standards and procedures could be regulated, a voluntary and learning oriented approach of Long-Term-Agreements was developed. It aimed at improvements in energy efficiency and was negotiated between the Ministry of Economic Affairs and the Confederation of Netherlands Industry and Employers (VNO-NCW). It resulted in the general goal to increase energy efficiency by 20 percent. Under this umbrella, sectoral agreements with different sector organisations were concluded. Finally, companies can join these branch covenants. Thus, the concrete agreements are part of an agreement scheme (see Figure 5).

Most industrial sectors agreed to achieve an energy improvement of 20 percent until 2000 compared with 1989. Due to branch specific potentials the targets varied from sector to sector. 31 sector LTAs have been concluded covering about 90 percent of the total industry energy consumption in the Netherlands. An intensive process management including monitoring, subsidy schemes, information services and enforcement procedure supports the LTA programme. Individual companies joining the agreement had to prepare and implement an individual Energy Conservation Plan (ECP). Thus, there are not only global targets but also targets for individual firms.

Figure 5: The Dutch LTA agreement scheme

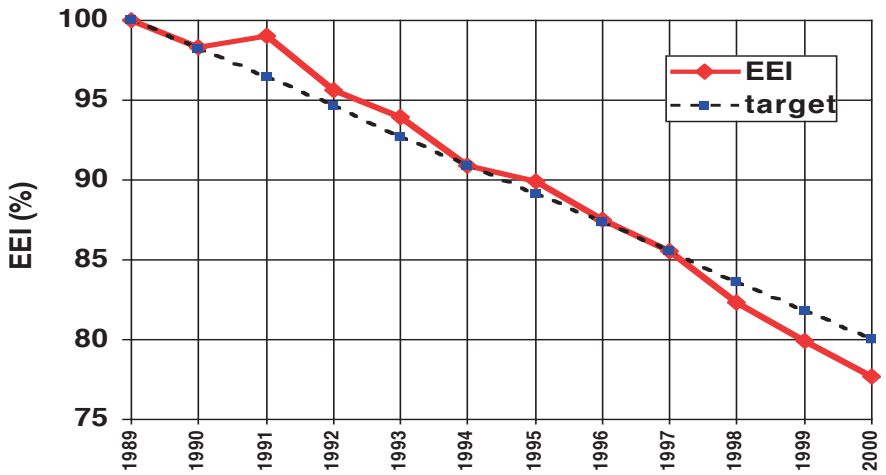


Source: Wuppertal Institute

Each company had to decide, if they wanted to join the agreement. In the case of signing, they committed themselves not only to contributing to the targets but especially to performing certain measures like the setting up of an energy efficiency plan, delivering monitoring reports and participating in working groups.

The Dutch energy agency, NOVEM (today: SenterNovem), as an independent third party, had the executive responsibility of the LTA programme. Before target setting, it carried out studies for potential increase of energy efficiency. During implementation, NOVEM was responsible for the monitoring, the control of the Energy Conservation Plans as well as several stimulating and facilitating tasks. An example for these activities was the set up of working groups in different sectors where jointly measures were developed to increase energy efficiency in the respective sector. By the end of 2002, the energy efficiency improvement turned out at 22.3 percent (see Figure 6).

Figure 6: Dutch LTA overall results (1989-2000)



Source: SenterNovem 2004

The voluntariness of the measures was chosen to involve actors more directly, raise their awareness and speed up action by avoiding long-lasting conflicts about regulatory measures. This is especially important, as the Dutch democracy is based on a consensus-seeking political culture. Nevertheless, the scheme was accompanied by incentives to participate and sanctions in the case of non-compliance (carrots and sticks).

4.2.2 The second generation: benchmarking covenant on energy efficiency

After the year 2000, the approach was renewed and extended. The most important change is the broadening of the measures towards the whole production chain (e.g. transportation aspects) and the partial incorporation of renewable energy sources. The energy intensive sectors (> 5 PJ (Petajoules) energy consumption) joined the benchmarking covenant. It is designed to head further on towards energy efficiency and guarantee that Dutch companies (among them there are the breweries) belong to the ten percent of the most energy-efficient firms in the world. The participating companies will therefore have to make efforts to consume energy more efficiently without compromising their international competitiveness. However, they do not need to go further with measures than their best global competitors.

The benchmarking approach is based on the first generation of LTA and included a lot of similar elements. It is an agreement scheme on association-level and individual companies can commit themselves to participate. Each sector sets up a benchmarking procedure and thus defines the target to be reached. Industrial enterprises do not only state that they will contribute to the agreed targets but allow monitoring the measures and oblige themselves to publish an annual Energy Efficiency Plan (EEP).

The participating companies commit to undertake a leading global performance. In exchange for this, the Dutch government agrees to make a reciprocal effort. The government ensures that no supplementary national policy governing CO_2 reduction or energy conservation is imposed on the participating companies.

The time horizon for the participating companies is 2012. A special feature of the covenant is the definition of targets as part of the agreement itself. The basic idea is that there are no prior-defined quantified targets (like in the LTA), other than the fact that production plants should belong to the 10 percent of the most energy-efficient and best performing in the world (best-industrial standard). To make this abstract goal more tangible, the participating companies will have to set this level themselves by means of an international benchmark procedure.

With the help of an independent consultant and under observation of an appropriate authority (the Verifikatiebureau Benchmarking Energy-efficiency (Verification Bureau Energy/VBE)) industrial enterprises compare their processing plants in the Netherlands with similar plants abroad. The Dutch plants need to individually measure themselves against the average energy efficiency of the best region in the world or with the best ten percent of the globally structured installations (excluding those in the Netherlands)[7]. So, the companies that are above the standard only have to ensure to remain above the worlds lead. If they are below the standard, they have to develop measures to close the gap. Thus, the development of the standard is crucial for the definition of individual targets of the companies (in this case: the breweries). The standard must be redefined every four years. Thus, the targets mostly affect the laggards and not the forerunner and thus promote a least cost approach.

Companies indicate in an energy efficiency plan that is updated every four years and supervised by the verification bureau, how and when the object should be reached. Thereby, the covenant contains criteria governing the rate of investment. Companies must begin by taking the most cost-effective measure (internal rate of return of 15 percent after tax), followed by measures that are less cost-effective. If they have not reached the world lead after having implemented these measures, they can also use flexible instruments such as trade in emission rights from 2008 onwards. The independent verification bureau will evaluate the energy efficiency plan. Once it has been approved, it will be incorporated into the environmental license. This plan must be reviewed, when the benchmark is redefined.

The implementation of the covenant is supervised. The Benchmarking Committee is responsible for overall implementation. This Committee consists of representatives of all the participating players. The Committee discusses a wide range of general bottlenecks, monitors the progress of the covenant and reports to the responsible ministries. The Benchmarking Verification Bureau has been specially established to monitor the practical aspects of the covenant. This independent bureau verifies for each company all different stages in the benchmark process. For example, the bureau checks whether the definition of the world lead is adequately underpinned and whether the energy efficiency plan has been properly put together. The bureau also issues advice on this to the participating company and to the competent authority.

The agreement takes the form of a civil law contract and incorporates 25 Articles and five annexes. These articles can be grouped into six major elements.

7 It will not be possible in every case to carry out this benchmark approach; e.g. if a unique process is involved or if the foreign plants do not want to take part in the analyses. In such cases, a best practice approach will be used to define the world lead.

Table 3: Structure of the agreement

Element	Sub-aspects
Targets	Determination of the best industrial standard and the gap (Art. 4 - 6)
Consideration and measures	Consideration (Art. 9 and 10), Energy Efficiency Plan (Art. 7) and Phasing (Art. 8)
Monitoring	Reporting (Art. 11 and 12) Evaluation (Art. 18)
Framing (inbuilt incentives and sanctions)	Benchmarking Commission and independent authority (Art. 13 to 15) Withdrawal (Art. 21) Sanctions (Art. 22)
Costs	Costs (Art. 16)
Formal aspects	Definitions (Art. 1), objectives (Art. 2) and participants (Art. 3) and a list of signatories (Appendix 1), issues regarding confidentiality (Art. 17), the time horizon (Art. 23) and the legal status (Art. 25)

Source: Wuppertal Institute

The legal framework

The first reference for the LTA and the benchmarking approach is the National Environmental Policy Plan. This defines the broad line of environmental policy in the Netherlands and states the goal of a substantial reduction of CO_2 emissions. At the Kyoto Conference, the European Union as a whole agreed on a total reduction of eight percent.

Both the LTA and the benchmarking system are linked to the permit system of the local authorities. Usually, it is the task of the local authorities to define for each company the environmental standards to be met according to environmental legislation. If a company takes part in the benchmarking covenant, it is no longer subject to this permit system with respect to energy efficiency as this topic is covered by the covenant. If a company fails to fulfil its obligations under the covenant or even does not want to participate, it falls under the permit system again and has to fulfil the requirements on energy efficiency set by the local authority. That is a strong sanctioning mechanism as local authorities can set stricter targets for individual companies compared to the targets of the covenant.

Furthermore, the new instrument of emissions trading is linked to the benchmarking. Companies participating in the covenant receive a fixed number of CO_2 allowances, whereas companies who do not participate have to negotiate with the local authorities. For companies that do not participate, the local authorities can assign fewer allowances. E.g. after not participating in the benchmarking, the local authorities reduced the CO_2 allowances of two companies substantially (at 15 percent). That was a strong and expensive target so that the two firms decided to join the benchmarking system afterwards.

Table 4: Overview of the benchmarking of breweries

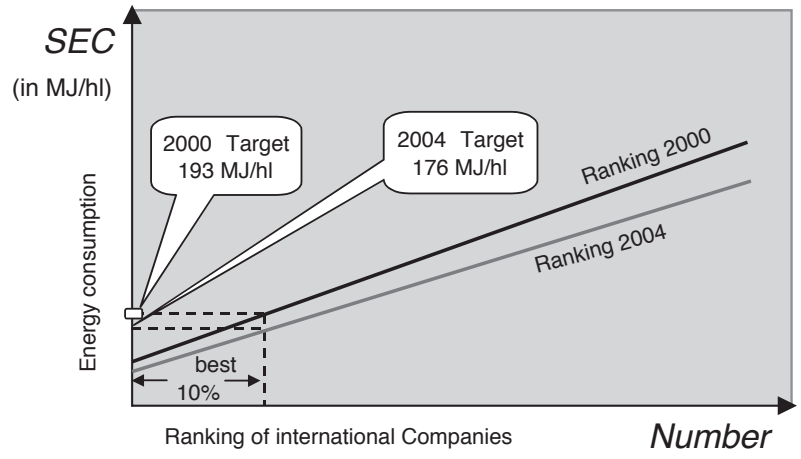
Problem	Climate change
Objectives	Make Dutch breweries more energy-efficient Make the participating brewers belong to the 10% most efficient in the world
Actors	Dutch Brewers' Association (CBK) The Benchmarking Commission Verification Bureau Energy (as independent authority)
Time	2000 to 2012 Three periods: benchmarking and update of energy efficiency plans must carried out every four years (2000, 2004 and 2008)
Framework	Benchmark covenant between the Confederation of Netherlands Industry and employers (VNO-NCW), sectoral business organisations and the Ministry for Economic Affairs as well as the Ministry for Housing, Spatial Planning and the Environment The National Environmental Protection Plan (NEPP) Future introduction of emission trading

Source: Wuppertal Institute

Process (at the example of the benchmarking for breweries)

After reaching strong improvement of energy efficiency in the first generation of LTA at the end of 2000, the Dutch government and the Dutch industry association (VNO-NCW) agreed on going further on this way and agreed in 1999 on the benchmarking covenant. In 2001 the large brewers decided to join. In a first step the brewery association Centraal Brouwerij Kantoor (CBK) was encouraged to organise the process of setting up a benchmark for this sector. Thus, a consultant (KWA Business Consultants) approved by the Verification Bureau developed a best industrial standard in industrial energy efficiency for the brewery sector. After sending a questionnaire to more than 500 breweries in the world and receiving 86 answers, the standard was defined at 193 MJ/hl (Megajoule/ hectolitre) Specific Energy Consumption (SEC) (Wouda, Pennartz 2002; Wouda 2004).

Figure 7: The definition of the benchmark in case of the brewery sector in 2000 and 2004



Source: Wuppertal Institute (adapted from Wouda, Pennartz 2002; Wouda 2004)

Afterwards, the same consultant evaluated the participating companies of the respective sector and checked whether they were above or below the standard. In this way it was defined, which individual targets had to be achieved. Since the end of 2000, the breweries carried out measures. In addition, monitoring and a second benchmark process were started. The benchmark was carried out again in 2004. Like in 2000, approximately 500 breweries from all over the world were asked to participate in the benchmark; 158 breweries, representing 26 percent of the world's beer production, took part. The best industrial standard was modified from 193 MJ/hl beer to 176 MJ/hl. The procedure of benchmarking, set up of energy efficiency plan, taking measures and monitoring will be carried out a third time. In the last phase, the companies can even reach their target by trading emission rights.

4.2.3 Evaluation of success factors

To learn from the Dutch case, the results of the LTA and the benchmarking for the brewery sector must be analysed more in detail. Thereby, it is referred to both LTA generations as a whole.

Problem solving capacity

The environmental effects are related to the performance of the companies as well as to economic growth. The Energy Efficiency Index (EEI) as well as, for the benchmarking of breweries, the Specific Energy Consumption (SEC) is relative and does not depend on economic growth. Even if the targets are reached, the total energy consumption, and thus the CO_2 emission, can increase. That happened in the first generation LTA. In the case of the benchmarking of breweries, the SEC is related to the production unit of a hectolitre (hl) beer. Thus, efficiency gains could be compensated by growth and no substantial improvement for the environment

would be reached. At the moment, it is too early to evaluate the reduction of CO_2 emissions. For the breweries no information is available so far.

An interim report from February 2002 states that several facilities were already under the top ten percent (Commissie Benchmarking 2002). However, the second benchmark carried out in 2004 and the decline of the SEC from 193 MJ/hl beer to 176 MJ/hl leads to the conclusion that more efforts are necessary.

However, estimations of the Utrecht University for the whole covenant and all participating industrial sectors show that a CO_2 gain of 5.7 mega-tonnes can be expected. Related to the political goal of the Dutch government of 25 mega-tonnes for the Netherlands and assuming an equal distribution of these reductions among all fields, the participating sectors should contribute with 13.5 mega-tonnes (Glasbergen 2004). Related to that number, the expected results are not very promising.

The targets of the benchmarking covenant on energy efficiency are not negotiated and defined in the agreement process. Instead, a soft and competition related objective "to belong among the ten percent most energy efficient firms in the world" was formulated. Hence, quantified targets are constructed individually for each plant and company and related to a periodically carried out benchmarking. This makes targets more flexible and supports allocation of measures. However, this approach leads to less transparency.

The monitoring procedures of the benchmarking covenant are based on the experiences of the first generation LTA. The methodology is advanced and reporting is frequent. The verification bureau is supervising not only the benchmarking but the achieved results as well. In the case of the breweries, the construction of specific energy consumption inside the benchmarking and the way to calculate it are accurate.

The covenant is a legally binding civil law contract. The most relevant sanction in the benchmarking system is the monitoring itself. As a part of the auditing or monitoring mechanism, the verification bureau visits companies and can advise them to improve measures. An incentive for industry is the appeal to belong to the top ten percent. This label is not only a motivation to participate but also to meet the terms. An external factor for participation is the possibility of the provincial authorities to decrease the CO_2 allowances in emission trading and the advantages for getting environmental permits from provincial environmental authorities.

Regarding soft effects the first generation of LTA working groups supported learning effects and information exchange. The benchmarking approach is not related to these experiences. But the benchmarking process itself raises awareness, not only in the Netherlands but also in other parts of the world. The system of

benchmarking and the objective and label "to belong to the best" is not only a motivation to participate but to inform about solutions. Generally speaking, the LTA was more about finding new solutions, while the benchmarking is focussing on the diffusion of best practice in energy efficiency.

Table 5: Problem solving capacity of LTA and benchmarking

Description of case	**Success factors**
Ambitious targets	
Ambitiousness of targets varies from sector to sector but is based on studies of efficiency potential (LTA)	Targets more than business-as-usual
In the 2nd generation ambitiousness varies from facility to facility and company to company (benchmarking)	
But (!): Increase in CO_2 emissions due to relatively high economic growth.	Relate targets closely to political targets (e.g. Kyoto)
Quantification of objectives is part of the job (benchmarking)	Quantified objectives
Intermediate target are related to measures (payback-time of 5 years)	Staged objectives
Studies for potential of energy-efficiency were carried out (LTA)	Carry out studies for technological potential of emission reduction
Compliance mechanisms	
Frequent and fixed reporting procedure	Reporting procedure
Controlling by independent authority (Novem and Verification Bureau)	Independent verification of results
Incentive: appeal for industry to be among the best in the world Internal sanction: monitoring and possibility of abandoning External incentive: possibility for lower allowances in emission trading	External compliance factors (integration in policy mix) Internal compliance factors included in the agreement Status as legally binding
Soft effects	
Benchmarking and reporting mechanisms	Promote dissemination of information
Innovation pressure and information dissemination through working groups (LTA)	Institutionalisation of environmental working groups and learning effects

Source: Wuppertal Institute

Legitimacy

The legitimacy of the benchmark is approved by the participation of public administrations and reporting to the parliament. Monitoring reports are published ensuring that the public is informed. Due to confidentiality reasons, no firm specific data can be accessed. Despite that, NGOs or civil society were not incorporated. There is no data concerning the acceptance in society.

Table 6: Legitimacy of LTA and benchmarking

Description of case	Success factors
Information of the public in form of aggregated data	Information of the public and transparency
Involvement of Environmental Ministry No NGOs participate	Involvement of environmental interests

Source: Wuppertal Institute

Costs

The costs are shared between public and industrial actors. While the government pays for the staff of the verification office, industry has to pay the consultants and the measures carried out. There is no information, if costs are calculated in beforehand. In relation to other agreements and commitments, the costs are higher due to independent supervision of benchmarking and reporting. But in relation to regulation, this cost does not seem to exceed regular monitoring costs. Companies pay the benchmarking itself, so that no costs for the public occur.

4.2.4 Lessons to be learned

In summary, the Dutch case is a rather successful example of European voluntary agreements. The comprehensive scheme and the extensive process management make it an example how the complex problem of climate change and energy efficiency can be addressed in a win-win constellation between industrial and environmental objectives.

Generally speaking, the Dutch LTA and benchmarking covenant scheme represent a highly developed system of co-ordinated action for environmental industrial management and cleaner production. The case of breweries is only an example of how a sector is involved in the broader approach of setting up a general agreement scheme. The agreements are process related and trying to improve energy efficiency in most industrial sectors.

While in the first generation LTA targets were sector-specific and negotiated, in the benchmarking the procedure itself leads to company specific objectives. Thus, the ambitiousness varies from facility to facility. A well structured monitoring

supported and controlled by an independent agency improves transparency and serves as a compliance factor. The framing and the integration in a policy mix are comprehensive. Incentives and sanctions are built in and push the companies to participate. Nevertheless, there is potential for improvement. It seems that a set up of working-groups like in the first generation LTA-scheme could have encouraged learning and information exchange.

4.3 Case Study 2: ACEA-agreement on the reduction of CO_2 from passenger cars (European Union)

In 1998, a voluntary agreement has been concluded between the European Commission and the European Automobile Manufacturers Association (ACEA) dealing with the environmental problem of CO_2 emissions from passenger cars. It aims at reducing CO_2 emissions from passenger cars. Consequently, it is a product related agreement. Although the Commission has called for the increased use of flexible policy instruments and hence for voluntary agreements since the publishing of the 5th environmental programme of the EU in 1992, only a small number of agreements has been concluded at the European level.

4.3.1 Description of the agreement

CO_2 emissions from the transport sector and especially from cars are an important environmental problem as they contribute significantly to climate change and are probably going to increase during the next years. Already at the beginning of the 1990s, this problem was identified by European institutions.

Box 1: Transport and climate change

The transport sector presents one of the greatest challenges for climate protection. In the EU, it is the fastest growing source of CO_2 emissions. In absence of any policy measures, CO_2 emissions from transport are predicted to rise almost 40% by 2010 compared to the level of 1990 and they will represent about 30% of European CO_2 emissions. Emissions from passenger cars constitute about 50% of the EU's transport-related CO_2 emissions and represent 12% of the total EU CO_2 emissions. The developments in the transport sector are a danger for the EU to reach its target committed under the Kyoto Protocol, which means a total reduction of CO_2 emission of 8% below 1990 levels by 2008. All these figures show the importance of this environmental problem.

Source: European Commission 1998, Singer, Volpi 2002

Different legal proposals concerning the problem of CO_2 emissions from cars (e.g. fiscal measures) were discussed from the beginning of the 1990s but no consensus between the EU member states could be reached. That is why European institutions favoured a voluntary approach then. Therefore, a voluntary agreement was concluded between the European Commission and ACEA in 1998 after two years of negotiation.

The agreement takes the form of a commitment containing specified targets on the reduction of CO_2 emissions from cars signed by ACEA in 1998[8], and a recommendation signed by the European Commission in 1999[9]. As negotiations between ACEA and the Commission have taken place, these two documents can be counted as an environmental voluntary agreement. European Parliament and the European governments (who are represented in the Council of the European Union — hereafter named the Council) are involved in so far as a Commission communication annually informs them about the progress of the agreement. They also decided on a supplement of the monitoring procedure in 2000 ("monitoring decision").

Members of ACEA are the European automobile manufacturers BMW, Porsche, Peugeot-Citroen, Daimler-Chrysler, Renault SA, Fiat, Scania, Ford, Volkswagen, General Motors, Volvo and MAN. The motive of the public authority, the European Commission, was to tackle the problem of CO_2 emissions from cars. As it turned out that the problem could not be solved by legislation or fiscal measures due to the lack of consensus between the EU member states, a voluntary agreement seemed to be a feasible solution. ACEA's motive behind the commitment was to prevent legislation or fiscal measures on CO_2 emissions from cars (e.g. a maximum standard for CO_2 emissions or a purchase tax) in order keep flexibility and to leave room for different car models. The voluntary agreement with the target of 140g CO_2/km represents more flexibility for the automotive industry than legal standards, as the target has to be reached for the average European car fleet and not by individual car companies or car models.

The legal framework

Voluntary Agreements at the EU level are legally not binding, as the Commission does not have a formal right to sign agreements with industry. That is why EU-wide voluntary agreements have until now been self-commitments by industry, recognised by the European Commission by an exchange of letters or a Commission Recommendation (ten Brink 2002).

The Commission has adopted guidelines on voluntary environmental agreements already in 1996 (European Commission 1996). European Parliament and Council have repeatedly expressed their interest in framework legislation on environmental agreements specifying how to deal with environmental agreements at the European level. In 2002, the Commission has published another communication on environmental agreements (European Commission 2002), in which the

8 ACEA Commitment on CO_2 emissions reductions from new passenger cars in the framework of an environmental agreement between the European Commission and ACEA, in: ACEA (2002).

9 Commission Recommendation of 5 February 1999 on the reduction of CO_2 emissions from passenger cars (1999/125/EC), in the Official Journal of the European Communities, L40, p. 49, 13.2.1999.

Commission recognises this demand and suggests how to handle environmental agreements in the future.

There is no legislative act in the area of CO_2 emissions from passenger cars at the European level. But in 1996, the European governments have approved a strategy that is based on three policies:

- A voluntary agreement with the automotive industry;
- The promotion of car fuel efficiency by fiscal measures; and
- A consumer fuel-economy labelling scheme of cars.

In general, this strategy is linked to the EU's target under the Kyoto Protocol (an eight percent reduction of CO_2 emissions by 2008) and shall contribute to reach CO_2 reductions in the transport sector. The Council conclusions specified the objective of the strategy: 120g CO_2/km should be attained on average for newly registered passenger cars by 2005, latest by 2010. The Council also indicated that industry should contribute significantly to this target by an agreement. The ACEA-agreement is one part of the implementation of this strategy. Like all voluntary agreements at the European level, it is legally not binding and no enforcement mechanism is contained in the agreement. The only sanction is the fact that the Commission will propose a legislative act if the targets of the agreement are not met. This is stated in the Commission Recommendation.

Table 7: Overview of ACEA-agreement on CO_2 emissions reductions

Problem	CO_2 emissions from passenger cars
Objectives	Reduction of CO_2 emissions from passenger cars: Reducing the CO_2 emissions of passenger cars to 140g CO_2/km by 2008 Achieving an intermediate CO_2 emission target of 165-170g CO_2/km by 2003 Placing passenger cars emitting 120g CO_2/km or less on the market in the Community by the year 2000
Actors	Agreement parties: European Automobile Manufacturers Association with 12 members European Commission Parties taking part in the monitoring: European Parliament Council of the European Union
Time	1998 to 2008
Framework	Community strategy to reduce CO_2 emissions from passenger cars and improve fuel economy (1996) Communication of the Commission on Environmental Agreements at Community level (2002)

Source: Wuppertal Institute

The agreement process

The problem of CO_2 emissions from passenger cars has been on the agenda since the beginning of the 1990s. The relevant actors of the national and European level tried to find solutions to tackle this problem.

Already in 1991, an EU Directive[10] required that the Council should decide on measures to limit CO_2 emissions from passenger cars. The Commission was instructed to develop proposals on this issue. Different proposals from the EU member states emerged, on which no consensus could be reached (Keay-Bright 2000: 18).

As a consequence of the failure to draft a legislative proposal, European Commission proposed the strategy to reduce CO_2 emissions from passenger cars in 1995 in which the voluntary agreement with the automotive industry played an important role. The European governments approved the strategy in 1996.

Negotiations between ACEA and the Commission on a voluntary agreement started in 1996 shortly after the strategy had been decided.[11] ACEA was not very enthusiastic about an EU-wide agreement in the beginning because there were already some voluntary commitments in force at the national level (Germany, France, Sweden). But in order to prevent legislation in the transport sector, negotiations were started then. The Commission tried to exert pressure on ACEA by presenting legal options concerning CO_2 emissions of cars, but this was not always very successful, as ACEA knew how difficult it would be to reach consensus between the EU member states. After difficult and lengthy negotiations, the agreement could finally be concluded in June 1998. One month later, ACEA presented its commitment (printed in ACEA 2002), and this was recognised by the Commission by a Recommendation in February 1999 (European Commission 1999). As already mentioned, this agreement has a special legal form distinct from other negotiated agreements, as the European Commission is not allowed to sign agreements with industry.

The implementation of the agreement has been carried out since it was concluded and recognised by the European Commission in 1999. From 2000 on, yearly joint monitoring reports from ACEA and the European Commission have been carried out, the first one analysing CO_2 emission from cars from 1995 until 1999. In 2000, the monitoring procedure has been extended under the influence of the European Parliament and the Council: The Commission has to report annually on the progress of the agreement to the European Parliament and the Council via a communication and the EU member states are required to provide data on CO_2

10 Directive 91/441/EEC

11 For a detailed description of the negotiations between ACEA and the European Commission, see Keay-Bright 2000: 19-26.

emissions of cars. The fourth and most recent annual report has been published at the beginning of 2004 (for the reporting year 2002) and states that ACEA seems to be on a good way to achieve its commitments (European Commission 2004b). A "Major Review" has been announced by ACEA in the voluntary agreement for the year 2003 which shall evaluate the agreement, the development of CO_2 emission reductions until 2003 and the potential for further CO_2 reduction with a view to move further towards the Community's objective of 120g CO_2/km by 2012. Until now, the results of this review have not been published.

4.3.2 Evaluation of success factors

Problem solving capacity

During the preparation of the agreement, ACEA carried out some technical studies on the possibilities of reducing CO_2 emissions from cars. The Commission was not able to carry out technical studies itself due to a lack of time and information and financial constraints as well.

The aim of the agreement is to achieve an average reduction of CO_2 emissions from new passenger cars of 25 percent by 2008 (compared to 1995). This corresponds to an average reduction from 186g CO_2/km (in 1995) to 140g CO_2/km in 2008. This reduction should be reached by technological developments affecting different car characteristics and market changes linked to this development.

The targets of the agreement are quantified and have a fixed timetable. An intermediate target exists as well (even though it is not very precise) so that it is possible to examine whether the automotive industry is on a good way to reach its achievements.

The European Commission could have gone for a more ambitious target of 120g CO_2/km, but it is questionable whether the agreement would have been concluded under these circumstances.

Table 8: Targets of the ACEA-agreement

Timeframe	Target
2000	Some members of ACEA will introduce cars emitting 120g CO_2/km or less to be sold on the EU market
2003	An interim target of 165-170g CO_2/km for the average of EU new car sales (this corresponds with a 9-11% reduction of CO_2 emissions compared to 1995)
2008	A target of 140g CO_2/km for the average of EU new car sales (this corresponds with a 25% reduction of CO_2 emissions compared to 1995)

Source: Wuppertal Institute based on ACEA (2002)

One crucial aspect of voluntary agreements in order to reach compliance is monitoring. In case of the ACEA-agreement, the monitoring process had not been defined in the initial agreement, but it has been improved during the implementation phase so that it could develop many strengths (ten Brink 2002: 446 f.). After the so-called "monitoring decision" made by the European Parliament and the Council in 2000, the monitoring reports are now communicated at a high political level by an annual Commission communication to the European Parliament and the Council. These data are also available in the Internet[12]. From 2002 on, independent data have been available from the member states allowing an independent verification of the ACEA data. Furthermore a joint reporting format across the associations and electronic formats for data provision have been introduced.

The ACEA-agreement is not legally binding and integrated in the community strategy to reduce CO_2 emissions from passenger cars. As other policy measures directly related to CO_2 emissions from cars do not exist, no further incentive that could stimulate emission reductions is provided. The only sanctioning measure, also mentioned in the Commission Recommendation, is the threat that the Commission is willing to propose a legislative act if ACEA fails to achieve the CO_2 emission target for 2008 or if ACEA does not make sufficient progress towards this objective. Keay-Bright points out that this threat has not been very strong because of the fact that a concrete proposal has not been developed and the threat has been thus relatively vague (Keay-Bright 2000).

A development related to the agreement has been the increase of the share of diesel cars from 24 percent in 1995 to 43.6 percent in 2002 and a decrease of gasoline cars from 73.4 percent to 56.3 percent. Diesel cars emit less CO_2. In 2002, petrol-fuelled vehicles emitted 172g CO_2/km whereas diesel-fuelled vehicles only emitted 155g CO_2/km. Thus, ACEA could reduce CO_2 emissions due to the development of "dieselisation". The Commission points out in its 2004 communication that "it was understood that the associations would not meet it [the target] by a simple increase in the diesel share only, but by technological developments and market changes linked to these developments" as well (European Commission 2004: 8)[13]. As a consequence of not too ambitious targets, this kind of innovation has only slowly taken place. Furthermore, the problem of particles in diesel motor emissions is a major problem as well. Thus, more comprehensive efforts are needed.

12 Sources are listed in the section *Links concerning the case studies.*

13 The Commission also mentions negative environmental effects of diesel-fuelled cars such as nano-particulate emissions, which may affect human health and points out that probably limits for these particle emissions will be tightened in the future.

There is no information available on whether learning processes and dissemination of information have taken place within ACEA. As the automotive sector is highly competitive, one can assume that companies tend to be careful in exchanging information on new technical innovations. But as the automobile manufacturers have committed themselves to reduce CO_2 emissions from cars, awareness on this issue has very probably emerged among the manufacturers.

The environmental situation has surely improved as the average emissions from new cars have decreased from initially 186g CO_2/km to 166g CO_2/km, and the automotive industry is on a good way to achieve its target until 2008. Nevertheless, the Commission stressed in its latest annual report on the strategy to reduce CO_2 emissions from cars that additional efforts are necessary for the automotive industries (European Commission 2004). CO_2 emissions have decreased annually about 1.5 percent, although a reduction rate of two percent from 1995 to 2008 would be necessary to meet the 140g target. Furthermore, it is unclear whether the actual decrease in CO_2 emissions corresponds with a business-as-usual trend.

It is questionable whether the agreement will contribute sufficiently to obligations of the EU under the Kyoto-Protocol. The target of 140g CO_2/km is probably not sufficient to stabilize CO_2 emissions from passenger cars at 1999 level by 2010 (Volpi/Singer 2002: 143) On the contrary, CO_2 emissions in total will probably increase due to increased sales of cars in the EU. If the target of the agreement was more ambitious, more environmental effects (i.e. the stabilisation or reduction of CO_2 emissions from passenger cars) could be reached.

There are other aspects that could have been made better: Before setting a target, a feasibility study not only by industry but by the public authority as well would have provided more information on the ambitiousness of the target. According to an OECD study, a 50 to 80 percent improvement in fuel economy would be technically possible during the next ten to 15 years at little extra cost (Singer/ Volpi 2002: 149). A more ambitious target would have led to a stronger innovation pressure for the automobile industry. Furthermore, detailed provisions on the monitoring procedure, incentives and sanctions within the agreement text and a legally binding status could have further stimulated compliance.

Table 9: Problem solving capacity of ACEA-agreement

Description of case	Success factors
Ambitious targets	
Target of 140g CO_2/km for the average of EU new car sales by 2008	Quantified objectives with clear time horizon
Intermediate target of 165-170g CO_2/km for the average of EU new car sales by 2003	Intermediate target in order to evaluate whether industry is on a good way to achieve final targets
Compliance mechanisms	
Joint monitoring by ACEA and the Commission, joint monitoring reports are published yearly on the Internet	Public monitoring procedure
Monitoring procedure has been improved by the "monitoring decision" providing independent data on CO_2 emissions from cars from the member states	Independent verification of industry data
Joint reporting format used, use of electronic formats for data provision	Facilitation of data comparison and evaluation
Commission intends to introduce legislation if ACEA does not comply with the agreement	External threat
Soft effects	
Slow diffusion of new technologies such as direct injection engines	Innovation pressure
Awareness seems to have been promoted within ACEA	Awareness rising

Source: Wuppertal Institute

Legitimacy

One major criticism on the ACEA-agreement is a lack of participation often pointed out by different stakeholder groups and European Institutions as well. Two important European Institutions — the European Parliament and the Council — as well as the civil society have not been involved in the negotiation process of the agreement. NGOs have also criticised that the public is not informed about the progress in CO_2 emissions made by the individual members of ACEA as the target applies to the industry association in total.

Table 10: Legitimacy of the ACEA-agreement

Description of case	Success factors
Joint monitoring reports by ACEA and Commission are communicated to the European Parliament and the Council via a Commission Communication	Other institutions are involved in controlling the implementation of the agreement: third party involvement
Monitoring reports are published on the Internet	Monitoring reports published in the internet creating transparency Information of the public

Source: Wuppertal Institute

In order to increase the acceptance of the agreement by the civil society and hence to increase its legitimacy, the public could have been better involved in the negotiation process, e.g. by a multi-stakeholder dialogue.

Costs

No information on the costs of the ACEA-agreement has been available. But as accompanying policy measures do not exist and framing is less developed, it can be assumed that implementation costs are low. The monitoring procedure is an exception from this assumption. Not only do ACEA and the Commission carry out joint monitoring reports, but also independent data is collected from the member states. An expert group has been established and a study has been carried out to identify and solve potential problems arising from the monitoring decision, as the member state data are not completely comparable to ACEA data (European Commission 2004. 11). It can be assumed that this procedure is time consuming for the administrations of the member states and the Commission and, thus, connected with a certain financial burden for the public authority.

4.3.3 Lessons to be learned

The ACEA-agreement has turned out to be effective concerning its performance and the monitoring procedure as well. Even if target achievement (compliance) seems to be rather successful, the targets could have been more ambitious. If CO_2 emissions are going to increase due to increased car sales in the EU in the future, targets will have to be set more ambitiously in a possible second round of the agreement if the EU wants to reach its commitments under the climate change regime. In such a case, it would be necessary that innovation processes have to take place faster than it has been the case until now.

Even if there were no provisions regarding the monitoring procedure in the agreement text, monitoring has developed in a positive way. Criticism by the European Parliament, the Council and civil society led to a comprehensive monitoring procedure, e.g. the provision of independent emission data form the member states. Moreover, the fact that yearly monitoring reports are being

published in the Internet contributes to the transparency and credibility of the agreement.

Besides the general threat of a legislative act by the Commission, further positive and negative sanctions — either within the agreement or by the integration in a policy mix — could have improved the effectiveness of the agreement.

4.4 Case Study 3: Agreement on gradual reduction of impact of laundry detergents on the environment (Czech Republic)

The third case study, taken from the Czech Republic, is dealing with a product-related voluntary environmental agreement, the reduction of phosphates in laundry detergents. It provides a good example of how voluntary agreements can replace command-and-control regulation by more flexible action and also shows its danger. Replacing command-and-control regulation is possible especially because the target-sector — the detergent producers — consists of relatively few but big companies. Assuming a variety of small and medium sized companies, it would be very difficult to include and control firms similarly. Another interesting point is the fact that in some other (former western) European countries, like Germany[14] and Austria, cleaner production in terms of lower quantity of phosphates in laundry detergents already existed. Thus, the case is more about innovation transfer than stimulation of new solutions.

Until 2004, on European level no single legislation regarding phosphates in laundry detergents exists[15]. Therefore the situation in the member states is fragmented and a variety of regulations allow very different levels of phosphates and different market shares of phosphate-free laundry detergents[16].

4.4.1 Description of the agreement

Starting point for negotiations about an agreement in the Czech Republic were concerns about the negative impact of laundry detergents on the environment, especially on a quality of surface water (see Box 6). To reach the aim of decreasing the amount of phosphates polluting surface water, two main measures

14 E.g. in Germany phosphates are nearly entirely banned from laundry detergents. Especially through the introduction of compact detergents the immission of phosphates was reduced from 42,000 tons in 1975 to 2,000 tons in 1993.

15 In European regulations concerning consumer information through labelling, phosphates are limited but not generally excluded. E.g. laundry detergents are excluded form the eco-label if phosphates exceed 30 g/washing.

16 In Switzerland all phosphates are forbidden. In Austria, Germany, Italy and Norway limits for the maximum proportion of phosphates exist as well as consumer information must be indicated on the packaging. This is common in other European countries, too, but no legally binding limits are given. In the new (eastern) European Union member states so far no legislative limits exist. Only in the Czech Republic and in Poland voluntary agreements are in force (FEA 2003).

should be taken: Firstly, it was intended to reduce the amount of phosphates in washing powders. Secondly, the share of compact detergent should be significantly increased. The latter is an improvement, because compact detergents bring the same quality in cleaning without any phosphates included. In addition, consumer information and biological degradability are incorporated, too.

Box 2: Environmental impact and role of phosphates

The Czech agreement is designed to contribute to the solution of water pollution issues, particularly eutrophication of surface water caused by phosphor and nitrogen. As a consequence of that, infestation of water plants (algae and phytoplankton) lead to a decrease in the oxygen-level in water. Finally, this is followed by threats to water animals and negative impacts to fishing.

Phosphates (mainly Pentanatriumtriphosphat) take a number of functions in detergents. Hardness-builders of water are complexed and the optimal ph-level for washing is assured. Further on, dirt-particles are postponed so that the greying of textiles in the washing-lye is held up. In phosphate-free laundry detergents — e.g. the ones on the German market — three alternative substances fulfil those functions: Zeolith A, Soda und Polycarboxylat (PCA). Even in these substances, some environmental problems exist. E.g. PCA is not biodegradable.

Source: Sauer 2001; FEA 2003

The agreement, signed in 1995[17], takes the form of a civil law contract and incorporates eleven paragraphs. These paragraphs outline the main elements of the agreement. Besides some formal aspects regarding the agreement parties, the issue and possibilities to terminate the agreement, the paragraphs are related to three elements: Targets, monitoring and framing. Within this framework the main focus is laid on targets, while only some general statements represent monitoring and framing.

[17] After the agreement was set up, the public discourse about phosphates continuously returned to the agreement and lead to improvements and changes by the signing of supplements in 1998 and 2001.

Table 11: Structure of the Czech detergent agreement

Element	**Sub-aspects**
Targets	Quantified limits of detergent ingredients to be reached (§ 3); Surfactant biodegradability (§ 5); requirement of ingredients that fulfil the standards of the EU (water framework 2000/60/EC; surface water directive 1975/440/EC) Promotion of compact detergents (§ 4); Consumers' information (§ 6) and labelling the non-phosphate detergents (2001) (§ 3b);
Monitoring	Joint evaluation of agreement's fulfilment and observance of agreement's principles (§ 7 and 8);
Framing (inbuilt incentives and sanctions)	Sanctions (§ 11); Sanctions for non-compliance are related to the threat of payments in the case of non-compliance (1.000.000 CZK).
Formal aspects	Further Provisions (§ 9); Termination of Agreement (§ 10)

Source: Wuppertal Institute

The contractors were the Ministry of the Environment and the Czech Soap and Detergent Products Association (CSDPA). On the side of the producers, the main motives were to show corporate responsibility and at the same time to limit negative impacts on business by a possible strict law. As a side effect, the formation of the CSDPA can be seen as a direct consequence of the will to come to a voluntary agreement with the Ministry. Member organisations of the association are five big companies covering more than 90 percent of the Czech detergent market: Unilever Czech Republic, Procter&Gamble Czech Republic, Henkel Czech Republic, Benckiser Czech Republic and Setuza).

Other involved parties were two non-governmental organizations (NGOs) called "Rosa" and "Veronika" as well as the Chemical and Technology College in Prague as independent experts. They were not formally involved in the negotiations but incorporated in monitoring (Sauer et al. 1999).

Table 12: Overview of the Czech detergent agreement

Problem	Phosphates polluting surface water
Objectives	Reduction of phosphates and other substances in surface water through: Reducing the share of phosphates in detergents to 5,5%; Promoting compact detergents; Informing the public;
Actors	Agreement parties: The Ministry of the Environment The Czech Soap and Detergent Products Association (5 biggest producers) In evaluation working group: 2 NGOs and Chemical and Technology College in Prague
Time	1995 to 2005
Framework	Prior to 1995 no other legislation in force, draft-law in 1993 Sanction (since 2001): Payment of 1.000.000 CZK (≈ 33.000 Euro) EU-legislation will be in force from 2005

Source: Wuppertal Institute

The legal framework

The voluntary agreement is entirely replacing all kinds of regulation regarding the issue of phosphates in surface water[18]. As even in the EU no limits or bans exist, the agreement remains an important instrument and might be renewed in 2005. The agreement is formulated like a civil law contract between two parties (Industry association and Ministry of Environment). But as the Czech constitution does not allow public actors to act under civil law, the agreement is probably not formally binding (Sauer et al. 2001: 87). However, until now, no court had to decide about that open question.

The agreement process

The discourse about the environmental problem of phosphates and the way of formulating a voluntary agreement in the Czech Republic was not finished after signing the contract. This was only the first phase in an ongoing discourse about the solution of the environmental problem. In this process, the agreement was amended twice. The agreement-process can be roughly divided in four phases. The end of each phase is marked by a formally signed agreement or supplement that summarises the results of the discourse and concrete negotiations.

[18] In contrast to the Czech situation, in Germany, a regulation from 1980 (Phosphathöchstmengen-verordnung) is added by additional voluntary commitments.

The first phase enclosed the awareness of an environmental problem and the political decision to address this problem by the voluntary agreement governance approach. After a draft proposal of the ministry, industry pushed the idea of voluntary action and formed a producer's association. In March 1995 it was finally agreed on a text between the detergent producers and the Ministry of Environment. In this first round, mainly the quantified targets were negotiated. Limits are quantified and separated in limits for normal detergents and so-called phosphate-free detergents. They are related to four to five components (see Table 13). As no time frame existed prior to 2001, no intermediate objectives are given.

Table 13:Quantified targets of the Czech detergent agreement

	Phosphate detergents	**Phosphate-free detergents**
EDTA	Max. 0.1 %	Max. 0.1 %
NTA	Max. 4.0 %	Max. 4.0 %
Polycarboxylates	Max. 6.0 %	Max. 6.0 %
Phosphorus in total	Max. 5.5 %	Max. 1.1 %

Source: Czech Voluntary Environmental Agreement 1995

Since 1996 a working group has hold annual evaluation meetings and has written reports. Due to the ongoing discussions and the results of monitoring 1997/1998, the ban of adducts of alkyl-phenols with ethylene-oxide was discussed. The discourse finally led to the signing of a supplement to the agreement that introduced a new paragraph stating the phase-out of these substances. While the period until 1998 was dominated by discussions about the targets, a third phase led to improvements in the pressure for compliance with the agreed objectives.

In 2000, the ministry pressurized — by again bringing a command-and-control regulation on the legislative agenda — further amendments concerning labelling, a concrete time-horizon and sanctions for non-compliance to the agreement. In July 2001, an appendix to the agreement was signed announcing to meet the objectives by the year 2005. In addition, a measure for the case of non-compliance was taken in. In the case of non-compliance the producer's association must pay a fee of 1,000,000 CZK (ca. 33,000 EUR). The forth phase is ongoing and should be finished by reaching the targets. Final evaluation is not yet carried out so that possible sanctions cannot be applied.

Table 14: Process of Czech detergent agreement

1993	Preparation of a draft-law (limits to phosphates: 5,5% until 1997 / afterwards 0,5%)
1994	Set-up of an producers association and start of negotiations
22.3.1995	**First agreement** Focus on targets Monitoring: annual meetings for evaluation
1996	Establishing a working group for voluntary agreement implementation evaluation (Members: MoE; Producer; NGO; Institute for Chemical Technology Prague)
23.6.1998	**First supplement** Enhancement of targets
2000	Re-opening of negotiations
23.7.2001	**Second supplement** Time-horizon Enhancement of targets Framing
2004	Access to EU Czech detergents are covered by European regulation

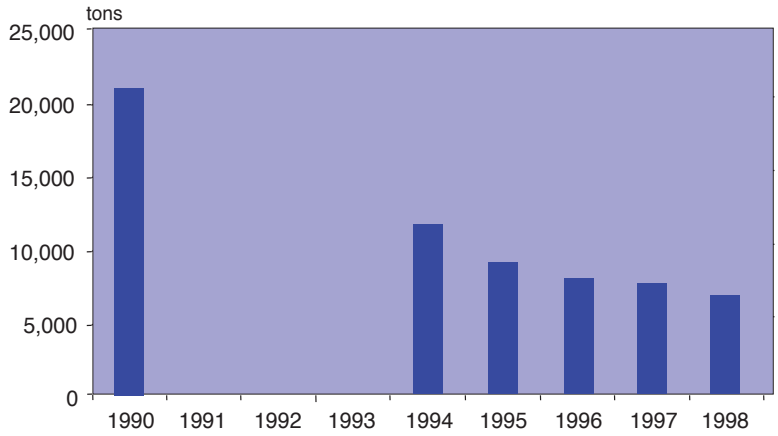
Source: Wuppertal Institute

4.4.2 Evaluation of success factors

Problem solving capacity

The agreement can be called successful, as targets seem to be reached. According to a study of Sauer (2001: 88) producers have respected the declared levels. On the other hand the share of compact detergents was not raised significantly. As at the moment no direct and actual data is available, an evaluation from 2002 (Dvorak 2002: 213 / see Figure 8) confirms that the total use of phosphate in laundry detergents is reduced.

Figure 8: Development of the amount of phosphate in laundry detergents



Source: Report of the working-group for evaluation of the agreement (cited from Dvorak 2002: 213)

The targets of the agreement are quantified and formulated in concrete objectives to be reached in 2005. The quantified objectives are not as high as technically possible. With the argument of rising costs for consumers and restrictions due to cleaning capacity of detergents, the producers resisted the public wish to ban phosphates totally. Thus, the 5.5 percent objective is only a compromise. In relation to other European countries the target is not very ambitious. The relatively weak position of the public authority can be considered as consequence from the absence of a concrete goal formulated in political debate. However, targets exceed a business-as-usual-scenario, as because of its characteristics and low price the use of phosphate would rather grow than decrease. Thus, the worst aspect of the 1995 agreement was certainly the missing of a time frame to reach the objectives

With regard to the compliance mechanisms, the Czech example is ambivalent. On the one hand side, nearly no sanctions or incentives are relevant and a monitoring procedure was not formally described in the agreement process. On the other hand, the latter point was solved quite quickly. Already in 1996, it became obviously that the agreement would not work without a formalised evaluation procedure. Hence, a working group was established incorporating NGOs and scientific institutions.

The framing of the Czech agreement is the most critical aspect. Even if there are some sanctions (payment in case of non-compliance of 1,000,000 CZK (33,000 EUR)), the agreement is not embedded in a regulative framework. The only opportunity to push industry to compliance is to threat by proposing legislative action. This threat is very helpful as the 2001 improvement shows. Although framing was limited, free-riding supposed to be rather unimportant. Firstly, most

of the companies are multinational, so that adoption of product improvements is a manageable task. Secondly, the five firms represent about 90 percent of detergent market. As the number of participants is small, a control of compliance in direct interactions between public authority and companies is possible.

Regarding soft effects, the amendments of the agreement show that learning effects probably occurred. From an overall perspective, dissemination of information and learning effects, mutual trust and promotion of awareness are likely to happen through the establishment of a common working and evaluation group. However, innovation pressure is very low. As solutions to the phosphate problem already existed in other countries, the development of new techniques to replace or substitute phosphor was not necessary. It is more about technology transfer than innovation.

Table 15: Problem solving capacity of Czech detergent agreement

Description of case	**Success factors**
Ambitious targets	
Targets extend business-as-usual	Ambitiousness of targets: Targets more than business-as-usual
Environmental situation is improved even if more would be possible	Improvement of environmental situation
Fail to significantly raise the use of compact detergents	Soft targets should be avoided
Quantified objectives exist but no intermediate targets	Quantified and staged objectives
Compliance mechanisms	
Annual reports are obligatory and a working group was established	Reporting procedure
Independent actors (NGO and scientist) control the reports	Independent verification of results
Civil law contract between public and private actor; but there are doubts about status as legal binding contract	Status as legally binding
External threat of regulation	External threat of regulation
Inbuilt sanction in form of non-compliance fee	Internal compliance-factors included
Soft effects	
The working group for monitoring is an institutionalised arena to encourage learning	Institutionalisation of environmental working groups

Source: Wuppertal Institute

Legitimacy

Even if no independent actors were formally involved in the negotiations, the legitimacy of the agreement must be considered as rather good. This could be based on two arguments. On the one hand, there were real negotiations between the Environmental Ministry, representing environmental interests, and the Industry. This constellation is in most cases better than talks between the Ministry of Economic Affairs and the industry as environmental interests are excluded. On the other hand, independent actors were involved in the monitoring process. As monitoring is very important for the compliance with the agreed targets, this supports fulfilment as well as improvements of the agreement.

Table 16:Legitimacy of Czech detergent agreement

Description of case	Success factors
The annual meetings of the evaluation group serve the information	Information of the public and transparency
The Ministry of Environment was responsible on side of the government and NGOs are involved	Involvement of environmental interests (environmental authority / NGOs)

Source: Wuppertal Institute

Costs

No cost calculations were made prior to agreeing on a common text. But with regard to costs, the Czech example must be stated as quite inexpensive. The estimated costs on preparation, negotiation and concluding of the agreement were 12,000 to 14,000 EUR. The annual monitoring costs are estimated on 600 EUR (Dvorak et al. 2002: 212). Thus, the financial burden for the public authority was low. Costs for the companies, related to the enhancement of the level of public information about an impact of laundry detergents on an environment and about compact detergents, have been low as well. The companies' activities in this way have been rather limited.

4.4.3 Lessons to be learned

Generally speaking, the Czech voluntary agreement on gradual reduction of impact of laundry detergents on the environment is a target-oriented agreement with a limited scope and a relation to a specific environmental problem like phosphate water pollution. It is a product related agreement that tries to influence the design and components of laundry detergents. The quantified targets are slightly ambitious but are likely to be reached. In contrast to that, soft objectives like providing consumer information and promoting compact detergents failed. A critical point concerning targets is the weakness of political objectives related to the use of phosphates. The voluntary agreement cannot replace the formulation of the political will.

On the one hand side, the agreement was enabled faster than legislation process leading to limits on phosphates. On the other hand side, the company-parties of the agreement have not been pressed heavily to develop a very ambitious effort to decrease the phosphate ingredients. Thus, there was a high danger of a regulatory capture. But in contrast to traditional regulation, further aspects — like increasing the share of compact detergents, the use of eco-labelling as well as to enhance the level of knowledge and information of the public — could have been covered by one single text. These characteristics make the agreement to a very lean approach facing a complex problem.

Nevertheless it must been stated that the framing of the agreement is rather limited. The sanction fee of 1,000,000 CZK (29,000 EUR) is only symbolic for large companies like Henkel or Unilever. As no corresponding regulation exists, it is difficult to develop an adequate incentive or sanction for fulfilling the agreement. Therefore, the access to the European Union and especially the threat of working out a regulation seemed to be very helpful to motivate industry in good performance. Remarkable is the incorporation of NGOs in the monitoring procedure. Thereby, additional pressure and more independent control were possible, finally leading to amendments like the introduction of a time frame.

4.5 Case Study 4: Commitment on phasing out of polybrominated diphenylethers (PBDE) as flame retardant in synthetic materials (Germany)

Contrary to the Czech Republic, the fourth case is addressed to a voluntary agreement that is related to a production process and portrays a case closer to self-regulation. It deals with the phasing out of polybrominated diphenylether (PBDE) as flame retardants in plastics. The most important applications are in the field of electrical and electro technical industry, e.g. in radio and television receiver.

Regarding the environmental effects, the agreement contributes to the reduction of water and air pollution as well as to the reduction of soil contamination. The synthetic producing industry is a part of the chemical sector. This case can be seen as a good example, as it demonstrates how fast, e.g. within four years, a voluntary agreement can lead to an overall abolishment of specific noxious substances in the production process of industries. Moreover, the agreement focuses on safety at work, too.

4.5.1 Description of the agreement

The German agreement is a negotiated self-commitment in form of a declaration. It grasps all relevant aspects leading to the conclusion and contains a list of measures that will be put into practice to achieve the environmental goals.

In the context of the discussion about Dioxin and its disastrous impact on health, also polybrominated diphenylether used as flame retardants in synthetic materials raises suspicion that during the smouldering polybrominated dibenzodioxins and dibenzofuranes emerge and are released. There have been two reasons being responsible for starting the initiative: Firstly, it was intended to achieve a substantial reduction of dioxin pollutants in air, water and soil. Especially the knowledge that these substances reach the food chain and accumulate in human's body was subject to serious concerns. A further point were the risks workers are exposed during the production process. In case of heating over 600° Celsius the substances release and attain easily the respiratory tract. It could be seen as a violation of occupational health and safety that may lead to legal consequences.

Box 3: Environmental impact and role of PBDE

Polybrominated diphenylether (PBDE), group designation for DecaPBDE, OctaPBDE and PentaPBDE, are organically compounds with different degrees of bromination. They are used in various plastics as additive flame retardants. As they possess a high effect in flame resistance, a broad range of possible applications and favourable prices, polybrominated diphenylether are mainly used in the electronic industry, for building materials as well as in the textile (furniture) industry.

Over the last decades, the worldwide consumption of four flame retardants has almost doubled. Some brominated flame retardants (BFR) are regarded as persistent compounds, which accumulate in the food chain (e.g. PentaPBDE, TBBPA). In case of uncontrolled burning, brominated dioxin and furan will be generated. They are suspected to possess a carcinogenic (e.g. DecaPBDE) und hormone accumulating impact (e.g. PentaPBDE). During the waste combustion, their noxious substances attain to water, air and soil. Finally, the polybrominated diphenylether can reach the food chain. Polybrominated diphenylether are direct preliminary stages of dioxin. In case of burning, apart from the normal gases dioxin and further products of decomposition evolve.

Source: Ökotest 2004

The German government can be regarded as the main initiator for the voluntary commitment. It took the responsibility for a survey on the emergence of dioxin in case of the combustion of plastics that has been realised in 1985 by the Federal Environmental Agency. Talks among the Federal Environmental Agency, the Federal Health Agency, the Federal Institute for Materials Research and Testing and representatives of the chemical industry gave reason for corresponding inquiries. First results induce further tests, but before getting the updated findings the Association of Synthetics Processing Industries committed themselves to the phasing out of PBDE.

The agreement took the form of a unilateral commitment. De facto, it is a letter from the industry to the Minister of Environment incorporating the specification of targets, measures to reach the targets, information about the danger and monitoring. The quantified target within the agreement is the total renouncement, i.e. a 100 percent reduction of polybrominated diphenylether (point 1). The development of substitutes for the polybrominated diphenylether constitutes the qualitative goal. Therefore, a time frame until 1990 is given. The agreement incorporates a list of measures to be implemented to reach the promised goals:

- Immediate stop of developing plastics that contains polybrominated diphenylethers as flame retardants;
- Development of substitutes in cooperation with the customers to fulfil the legal framework on fire standards;
- As far as measures are not possible for the short term, customers have to be informed about the problems;
- Informing the public authorities regularly about the degree of substitution;
- The respective companies of the association commit to an investigation programme for the elaboration on risk assessment. The collaboration with relevant actors has been offered.

Concerning monitoring, a regular report shall inform about the progression achieved through the implemented measures, and the elaboration of an investigation programme for the risk assessment served as a base for evaluations.

However, there were negotiations between the Federal Environmental Agency and the Association of the Chemical Industry; no NGO was involved in this process. Indeed, public discussions about the danger of dioxin have mainly contributed to the starting of the process. The motivation of the Association of the Chemical Industry results from the outcomes of the first examinations, claimed by public authorities, on what kind of substances may be released by PBDE in case of heating up at a certain temperature, and what impact may be caused by the emerging decomposition products. A further motivation to commit the phase-out surely was the menace of hard legal regulations that let no or just little scope for self-determined action.

The legal framework

Regulations concerning hazardous materials exist in the Federal Republic of Germany for a long time. In the early 1980s when PBDE came under suspect to cause serious health problems no other member state of the European Union except Germany has been developed adequate regulation. Even till 2004, no other country has dealt with the problem. Now, an EU-wide guideline bans the use of polybrominated diphenylether as flame retardants. This was a result of a risk assessment in the context of the EU programme on recyclables.

Table 17: Overview of the German PBDE phase-out commitment

Problem	Polybrominated diphenylethers contaminating water, air and soil
Objectives	Phase-out of polybrominated diphenylethers as flame retardants in plastics through: Development and use of substitutes Total renunciation of PBDE as flame retardants in synthetics
Actors	Agreement parties: The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety Federal Environmental Agency Association of the Chemical Industry/Association of Synthetic Processing Industries
Time	1986 to 1990
Framework	No direct German regulation concerning PBDE Threat of regulation EU-guideline in force since 2004 (EU 76/769/EEC)

Source: Wuppertal Institute

The agreement process

Disastrous accidents in chemical factories in Seveso/Italy (1976) and Bhopal/ India (1980) constitute the starting point of the discussions about the impact of dioxin on the living environment. This led to a process of rethinking concerning the treatment of certain substances. In this context, the beginning of the debate about PBDE was characterized by the raising of awareness concerning the environmental problems. Talks between representatives of several relevant ministries and the industry led to subsequent examinations on the chemical reactions of polybrominated diphenylether. The results were worrying and cause further investigations. Before receiving the newest results, the Association of the Chemical Industry declared the self-commitment in August 1986.

The first measures have already been implemented in the last quarter of 1986, shortly after signing of the commitment. At the beginning of 1987 the quantitative data for 1986 have been surveyed and served as a base for the subsequent development. The required apprpriate development of substitutes was accompanied by technical problems: New “ingredients” demanded for new conditions of processing what influenced the characteristics of the end product. Due to international safety standards, a scrutiny of the altered products had to be realized. Moreover, the succeeding industries like for example the electronic industry had to implement large-scale safety tests, too. This led to a delay in implementing measures.

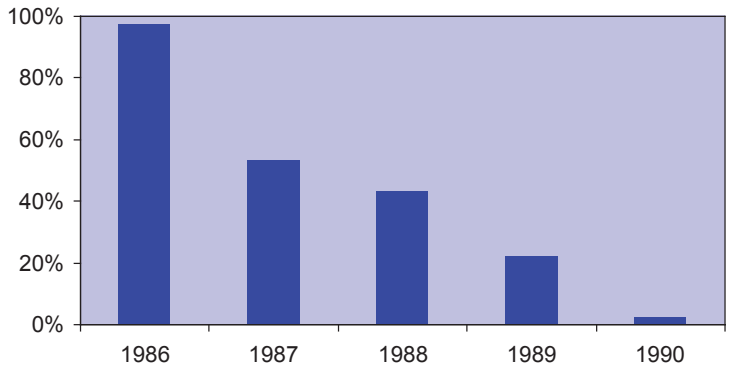
4.5.2 Evaluation of success factors

The German case study, dealing with the abatement of PBDE, is a good example that allows learning towards how the phase-out of hazardous substances can be organised flexibly.

Problem solving capacity

The agreement has contributed to the protection of environment and people. With 98 percent reduction of PBDE realized in 1990, the target was almost reached (see Figure 9). However, the improvement of the environmental situation has to be considered from another point of view: The amount of synthetic materials provided with PBDE by the German synthetic producing industry accounts for only one percent of all synthetics. As no other country has been released guidelines on the use of PBDE, imports of substances and products are still a danger for the living environment in Germany.

Figure 9: The reduction on the sale of synthetics containing PBDE



Source: Wuppertal Institute, based on documents of the Association of Synthetic Producing Industries

The framing of the German agreement is not very strong, as it is a self-commitment that is not legally binding. There are no sanctions in case of non-compliance. On the other side, the threat for the industry is the possible hard legal ban on the respective substances and products. Although a legal framework does not exist, the problem of free-riding has not been observed. Also the monitoring process within this agreement is not worked out in detail. The only point fixed in the agreement is the commitment to inform the public authorities regularly on the development of the process. The association has been agreed upon to realise regularly own surveys of the related companies and to transfer the results to the respective public authorities. The evaluation base is the elaborated investigation programme on risk assessment.

There are just a few soft effects that have been developed in the context of this process. In addition to the public discussion about the impact of dioxin a raising

awareness about the danger coming from noxious substances in daily life has been evolved. This was promoted through the commitment on informing customers about the potential risks of polybrominated diphenylether. Grievous concerns about the impact of dioxin related substances and vivid public discussion increases innovation pressure that causes rapid development of chemical substitutes.

Table 18: Problem solving capacity of German PBDE phase-out commitment

Description of case	**Success factors**
Ambitious targets	
Targets extend business-as-usual	Targets more than business-as-usual
Very easy and quantified objectives exist No intermediate targets (because of the short time frame)	Quantified and staged objectives
Improved environmental situation, but still PBDE products sold in Germany (imported)	Improvement of environmental situation
Compliance mechanisms	
Regular surveys and reports (no time frame defined)	Reporting procedure
Threat of implementing a legal ban	Threat of regulation (the shadow of hierarchy)
Soft effects	
The commitment led to a raise of awareness about PBDE related risks (studies carried out).	Dissemination of information and promotion of awareness
High innovation pressure as other components had to replace PBDE within four years	Innovation pressure

Source: Wuppertal Institute

Legitimacy

Two important actors were involved in the process: the responsible environmental ministry and agency as well as the concerned industry. They designed this negotiated self-commitment, but did not involve actors of the civil society like NGOs. Nonetheless, this agreement can be regarded as legitimate.

Costs

Regarding the costs emerging from the process, two different aspects have to be stressed. Firstly, the implementation of safety test after the required alteration of the synthetics is cost-intensive. Secondly, the higher prices resulting from the expensive test led to market deficits as foreign companies still exported their PBDE-containing products to the German market where they have been sold at cheaper prices. An additional burden of a public authority does not exist.

Table 19: Legitimacy of German PBDE phase-out commitment

Description of case	Success factors
Public participation was not carried out during negotiations Information has been communicated to industry's customers	Information of the public and transparency
The environmental ministry and relevant agencies were involved No information on the acceptance in society available	Involvement of environmental interests (environmental authority / NGOs) Broad acceptance in society

Source: Wuppertal Institute

4.5.3 Lessons to be learned

The agreement is a self-commitment strongly influenced by public discussions and grievous concerns of the public environmental authorities about the impact of dioxin on the living environment. It is an example for a very simple and short agreement (or commitment) addressing one particular environmental problem. Clear defined quantitative and qualitative targets are subject to the agreement. Intermediate stages have not been incorporated in the agreement, possibly due to the short time frame of four years. The environmental target led to a rapid solution of the problem giving the companies some flexibility in looking for substitutes and change of production processes.

The phase-out commitment shows that co-operative action between public authorities and industry can lead to solutions without regulation. However, the framing aspect is the most critical point within the implementation of the agreement. Except the threat of regulation, neither sanctions nor incentives were set up. E.g. it could have been a positive measure of the government to give the perspective of a ban of PBDE in Germany from 1990. Thereby, the efforts of German industry would have led to a competition advantage in relation to foreign companies still using PBDE.

Generally speaking, there are rather simple and effective forms of voluntary agreements as well. But the opportunity to choose such an approach is closely connected to the environmental problem.

5 Success factors in a comparative perspective

The presented case studies provide the basis for the definition of success factors. There are well designed and organised aspects that show how voluntary agreements lead to successful results. The comparative perspective is not only a chance to identify the most important aspects but gives information about the influence of the institutional and cultural background for success. In the detailed analysis of the cases, the special strengths and weaknesses of the cases have been already described. Developing these findings further on and carrying out a comparative analysis provides additional and more general information than single cases can do.

However, analysing success of voluntary agreements in terms of an improvement of the environmental situation is a comprehensive task. Observed environmental progress could be caused by other measures too, while success could be overshadowed through developments in other sectors. While in relation to pollution abatement of large industrial facilities this is manageable, other contexts and problems are more complex[19].

The comparative analysis and the formulation of more general success factors follow the terms "problem solving capacity", "legitimacy" and "costs". The focus of this analysis lays on problem solving capacity regarding environmental effects. In a second step, success factors regarding the emergence are described. Thereby, the context must be considered. This is particularly important because this study aims at providing a basis for policy transfer.

5.1 Success factors for problem solving capacity

Problem solving capacity is the main dimension of the evaluation of the case studies (see chapter 4.1.2). It is closely related to the direct and indirect environmental effects of the agreements. As success can be related to an improvement of the environmental situation, success factors for problem solving capacity are elements of the agreement or measures in the process of developing and implementing agreements that make the effects occur and contribute to a more positive environmental situation. However, direct links between agreement and improvement of the environment are seldom. Only the German phase-.out commitment of PBDE shows a clear link between the policy instrument and the environment. The difficulties are rooted in the fact that the development of the environment is

[19] Especially in cases where an instrument is part of a policy mix, a wide range of actors are collectively responsible or policies addressing only a limited range of actors, a policy cannot be easily tied to an improvement of the environmental situation. E.g. addressing problems like climate change or aiming at sectors with fragmented structures (like a high number of small and medium sized companies) complicate the measuring of success.

depending on several different factors like e.g. unintended side effects, economic growth or technological development. The effect of one single measure (the agreement) can therefore be overshadowed or supported by other trends. Hence, the analysis of agreements is difficult as long as there is no specific concept for operationalising environmental effectiveness with regard to the specific case.

While some scientific studies employ a set of evaluation criteria derived from other cases or experiences or base their suggestions on rational models of decision-making, others only assess the compliance with the previously defined political objectives (e.g. Mol et al. 2000). However, all of these approaches have difficulties and problems. To come to a simple and useable framework for assessment, this study will focus on three substantive dimensions of success:

1. The ambitiousness of agreed targets;
2. The compliance with these targets; and
3. The contribution towards policy learning.

While the first point refers to the environmental situation, the second is only connected to internal developments of the agreement. The third aspect of policy learning is pointing towards long-term related soft effects based on the cooperative relation between industry and environmental authorities. However, the main categories for evaluation are ambitiousness and compliance. Only if both aspects are fulfilled, a voluntary agreement can be successful. In other words: Even if industry complies with targets, if these are not ambitious, an agreement cannot be called successful. The same conclusion is valid for the opposite constellation: If targets are ambitious but industry fails to reach them, the agreement is not successful as well. The emergence of soft effects is only an additional positive outcome.

Generally spoken, these three substantive dimensions help to operationalize the term “problem solving capacity”. Along these concepts success factors are presented in the following paragraphs. These success factors are based on the four cases and they take the form of procedural mechanisms that contributed to the positive outcome of the agreements.

Indeed, the results are not completely new as other studies show similar results and recommendations. Nevertheless, the presented systemisation helps to conceptualise good practice and connect it to different phases of the agreement process.

5.1.1 Ambitiousness of targets

Voluntary agreements cover a broad range of policy issues. Thus, the targets can be manifold from phasing out hazardous substances to energy efficiency and reduction of CO_2 emissions through product design (ACEA case).

Target setting is the central task in each voluntary agreement process. A first task is to check if the agreement and its proposed targets are in line with the political targets that are defined in development plans, sustainability strategies or multilateral agreements between nation states. Secondly, the even politically defined targets should not be symbolic. Without ambitious targets agreements turn to be symbolic policies that do not have any environmental effect. For the definition of "ambitiousness" it is necessary to define a business-as-usual trend. Only if the targets extend the measures that would have been taken anyway, additional effects can be expected. Hence, a first success factor is to define a business-as-usual trend prior to the negotiations. This task is mostly not very complicated. In the selected agreements this seemed to be fulfilled, even if e.g. in the ACEA-agreement the Commissions attempts were not sufficient.

Nevertheless, the business-as-usual trend is often connected to strong environmental problems and targets only related to this scale could still be problematic. While e.g. the phase out of PBDE is an adequate measure, the ACEA agreement shows that even the agreed targets are still not ambitious enough to contribute to major improvements. In this context, the Dutch LTA provides an interesting approach towards realistic but still ambitious targets. Prior to negotiations, scientific studies concerning the potential for energy efficiency in production processes were carried out. These studies provided a pragmatic picture of possible measures and showed a rough trend on what the targets could look like. Thus, an independent analysis of targets is rather helpful in negotiations.

After defining the ambitiousness, further aspects related to targets are relevant. A common element of voluntary agreements is the long-term perspective and the challenges to organise a process of environmental improvements. Two aspects are crucial to come to reasonable results: Quantified, staged objectives and a clear time horizon for implementation. These success factors are especially important in order to measure and evaluate compliance. Thereby, an important aspect is the precision and opportunity to measure success. An aspect of the Czech case underlines, that the vague performance target to encourage the use of compact laundry detergents is less successful than the quantified goal to reduce phosphor to 5.5 percent. In the Dutch LTA, the development of the energy efficiency index (EEI) was a crucial element for reaching consensus about an objective that is still easy to measure and to monitor.

In addition to the definition of targets a concrete time-horizon as well as a well-organized implementation process is needed. Only if a certain date is linked to the targets, control is possible and motivation to act is raised. Regarding the timing of the implementation process, the Dutch benchmarking covenant provides an important feature of a well organised and structured process. The Czech case demonstrates how important a timeframe can be. Due to criticism and slow progress, a time horizon has been added afterwards. This led to a more effective

agreement. Furthermore, industry can act relatively flexible within the time-horizon. However, it must be considered that long-term perspectives incorporate the danger of starting measures too late. Furthermore, intermediate targets are quite useful to remind actors to their commitments and allow an appraisal through monitoring. The ACEA-agreement is a good example for intermediate targets: They initiate early action especially in a long-term perspective for e.g. ten years.

In summary, five success factors towards ambitious target setting can be identified: independent analysis, relation to political targets, going beyond business-as-usual, quantified and easily measurable targets as well as a concrete time horizon with interim objectives. As Table 20 shows the four presented cases perform rather well in target setting. However in most cases, there is still a discourse if targets are strong enough. Therefore, it is useful to have a public debate about the targets and possible additional measures in the policy mix.

Table 20: Comparative analysis of success factors for target setting

	Dutch LTA and benchmarking	**ACEA agreement**	**Czech Detergent agreement**	**German phase-out commitment of PBDE**
Independent analysis of the problem	√✓	–√	–	✓
Relation to politically defined targets	(Only LTA)	✓	–	✓
Going beyond business-as-usual	✓	(✓)	✓	✓
Quantified targets	✓	✓	✓	✓
Time horizon and interim targets	✓	✓	Introduced later	✓

Source: Wuppertal Institute

A specific case in target setting is the benchmarking covenant. A concrete target of the covenant is to develop specific targets at the company level. Through the definition of a method more flexible and more adjusted targets could be developed. Thus the allocation of measures is supported. Nevertheless, the targets could be quite ambitious on company level. Due to the clear time horizon and the organisation of measures this kind of target setting is an alternative to a quantified objective. Even though, this is only needed to address complex problems like climate change. For problems like the hazards of substances like in the German case, such an approach is not needed.

5.1.2 Compliance with targets

After agreeing on certain targets, the implementation of measures towards compliance with those objectives is the next step to come to successful agreements. At that stage, it is rather helpful if the agreements have the status of being legally binding. In that case, the relation between public and private actors is similar to implementation of command-and-control approaches. In the Dutch LTA as well as in the Czech detergent agreement civil law contracts between the parties establish a legal based relation. In the Dutch LTA even single companies and not business associations commit themselves to act towards the goals of the (sector-) agreement.

But the legal form is not a guarantee for compliance. Non-binding agreements can be as successful as binding ones. The German and the ACEA example show that the lack of the status does not automatically lead to non-compliance. That is mainly related to two aspects: framing and monitoring. While framing means to take measures that actively support implementation, monitoring is the control dimension of voluntary agreements.

Incentives and sanctions

Incentives and sanctions can be used to frame the implementation of the voluntary agreement. The metaphor of "carrots and sticks" outlines the underlying governance approach of helping industry to act on the one hand and requiring action on the other hand. In this context, it does not depend crucially on the fact whether these incentives and sanctions are built inside the agreement as a paragraph or if they exist independently like e.g. subsidies for energy efficient technology.

The Czech and the Dutch cases are examples for in-built factors like the link to a permit system (LTA) and emissions trading (benchmarking) or a fee that must be paid in the case of non-compliance (detergent agreement). The existence of working groups supports awareness and compliance in both cases. In the Dutch case, other learning procedures like best practice information or consultant involvement are supportive elements. Furthermore, the requirements of a company specific energy efficiency plan as well as the phasing of the procedures and measures to be taken are very detailed and further examples for framing implementation of the agreement. In addition, the monitoring procedure can be understood as an internal framing, as well.

The LTA case is also a good example for external framing. The existence of a National Environmental Policy Plan and supportive subsidies push implementation of energy efficiency measures. Generally speaking, external framing means the integration in a policy mix. That is important because various matters and policy instruments could address industry and support each other. The co-existence of voluntary agreements and labelling of products to change consumer

behaviour, realised e.g. in the ACEA case, is a good example. Especially in product related policies, a policy mix seems to be necessary. A consumer stimulus was missing in the Czech detergent agreement, which could be an explanation of the failure of the soft target "increasing the share of compact detergents".

To sum up, success factors are the design of in-built incentives and sanctions as well as external framing through the integration of the agreement in a policy mix. In each specific situation this could be very heterogeneous.

Reporting and monitoring

Monitoring is very important in order to control the efforts made by industry. In this task, there are very few differences to command-and-control approaches. The existence of a regular evaluation and supervision of results is a crucial element to make industry comply with the agreed targets. Without monitoring, the danger of non-compliance and free riding is relatively high. Thus, not only the environmental situation, but also the implemented measure should be observed. To develop an ambitious good monitoring scheme, a comprehensive methodology is needed (e.g. the Dutch LTA).

In all case studies monitoring was carried out. Even though, the design of reporting in the German case was much weaker than in other examples. The monitoring for the benchmarking covenant requires annual reporting and an independent authority controls compliance. This is an important factor as the data are delivered by the enterprises themselves. In the Czech case a monitoring working group was built up. Within this group, the Environmental Ministry and the NGOs controlled the efforts and progresses. The efforts of the European Parliament pushed forward the development of monitoring for the ACEA-agreement. Without such a comprehensive system and the public access to the information, the pressure for compliance would be lower.

Generally speaking, success factors with regard to monitoring are: transparent reporting procedure (aggregated data should be published), a methodology to secure standard and the incorporation of an independent verifier.

Overview of compliance factors

In contrast to the first step of target setting, compliance is a critical task of the presented case studies. In a comparative perspective, the analysis shows a very heterogeneous picture. While the German phase-out commitment for PBDE did only refer to a simple threat of legislative action, the Dutch case shows an ambitious and highly evolved system of incentives to participate and sanctions to push companies. Even if it depends on the specific political situation and the environmental problem addressed, the Dutch LTAs are exemplary for organising an implementation process that actively supports compliance. It even has strong similarities to public schemes like EMAS.

The weaker performance of the ACEA and the Czech case are probably related to these aspects. The agreements are simply framed by political pressure and the "threat of regulation". There is no institutionalised and permanent push towards compliance that is independent from political debate. However, the German case shows that even without sophisticated incentives and sanctions, the fulfilment of targets is possible. But the danger of non-compliance is much higher. The failure of the German industry to fulfil its 1996 declaration for climate protection illustrates this danger.

The differences between the evaluated agreements are smaller in monitoring. The set up of a reporting procedure and a monitoring methodology is a basic requirement. Independent verifiers like the European Parliament, the Czech working group including NGOs or SenterNovem in the LTA demonstrate that the credibility of implementation increases.

Table 21: Comparative analysis of success factors for compliance with targets

	Dutch LTA and benchmarking	**ACEA agreement**	**Czech Detergent agreement**	**German phase-out commitment of PBDE**
Legally binding	✓	–	✓	–
Individual company responsibility	✓	–	–	–
Independent actor for process organisation	✓	–	–	–
Internal incentives and sanctions	✓	–	Only small fee	–
External incentives and sanctions	✓	Threat of regulation	Threat of regulation	Threat of regulation
Transparent reporting procedure	✓	✓	✓	✓
Independent verification of reported results	✓	✓	Working group including NGOs	–

Source: Wuppertal Institute

5.1.3 Soft effects towards learning

Last but not least, soft effects towards learning are a further element of the problem solving capacity of voluntary agreements. However, soft effects do neither support ambitious targets nor compliance. Soft effects do not directly affect environmental effectiveness but contribute indirectly to an improvement of the environment in a long-term perspective.

Firstly, the agreement itself and the monitoring reports support information dissemination and transfer of knowledge. In the four case studies agreements are concluded with business associations that serve as an intermediate actor between the companies. In addition, the fact that companies have to react on the agreement makes them think about solutions and supports innovation. Furthermore, the Dutch case demonstrates that information exchange in working groups or visits through external consultants promote awareness.

In a comparative perspective, soft effects and learning are supported in the four cases. The success factors are dissemination of information, working groups and incorporation of intermediate organisations.

Table 22: Comparative analysis of success factors for soft effects

	Dutch LTA and benchmarking	**ACEA agreement**	**Czech Detergent agreement**	**German phase-out commitment of PBDE**
Dissemination of information	✓	✓	✓	–
Institutionalisation of working groups	✓	–	–	–
Incorporation of inter-mediate organisation	✓	–	–	–

Source: Wuppertal Institute

5.2 Legitimacy and costs

Legitimacy and costs are not the focus of this study. Nevertheless, some more general aspects are discussed in a comparative perspective. Only if the outcome is in line with democratic norms and the costs do not exceed the ones of regulation, voluntary agreements constitute a possible alternative.

Legitimacy

The theoretical problem of voluntary agreements is that the addressed actor of the instrument (industry) is able to influence the objectives and avoid independent control. Above all, the situation of regulatory capture must be absolutely prevented. If private actors succeed in avoiding measures that would have been obligatory by introducing regulation, the function of the government to act along common and public interests fails. Like already mentioned with regards to targets, political goals and the public opinion must be dominant to guarantee legitimacy.

As a consequence the substantive dimension of legitimacy is the acceptance in society. If there is a public debate about the problem and the possible measures and the outcome is accepted broadly, there are no democratic problems with using voluntary agreements. The more procedural success factors that refer to such broad acceptance are twofold:

1. Transparency and information of the public
2. Involvement of public interests (e.g. multi stakeholder dialogue)

While the first is closely related to monitoring, the second success factor points at participation and involvement of independent actors. As mentioned before, monitoring is a basic requirement and is fulfilled in all of the assessed cases. Problems, like the publication of company specific data were solved by publishing aggregated information. Regarding involvement of independent actors, a comparative analysis shows a more heterogeneous picture. While in the Czech case NGOs participate in monitoring, the Dutch government excludes totally independent actors but involves an intermediate organisation in order to guarantee objectiveness. In the ACEA case, the European Parliament called for more involvement, which led to a better monitoring procedure and a better acceptance of the agreement. Only in the German case, no independent actors are involved directly. However, the very ambitious target of totally phasing-out a substance cannot be criticised with regard to legitimacy.

Costs

One of the main arguments for voluntary agreements is the cost-effectiveness. Unfortunately, the four presented case studies do not provide substantial information about the costs of voluntary agreements. Much more detailed analysis would have been necessary.

However, some more general and logically deducted principles are developed. To reach cost-effectiveness, a cost calculation in advance could be helpful. The basic principle should be to avoid a disproportionate burden for the public authority and the enterprises. In a comparative perspective it can be assumed that especially the framing of an agreement towards compliance leads to costs for the public actors. In target setting, independent studies will be responsible for the biggest share in costs. The negotiation itself probably does not require major expenditures.

Furthermore, implementation can imply a certain amount of money, especially if the targets to achieve are very ambitious.

Thus, the Dutch LTA and the benchmarking are likely to be the "most expensive" of the four cases. Nevertheless, under the perspective of a price-performance ratio, they could even have been the cheapest solution.

5.3 Context and emergence of voluntary agreements

Voluntary agreements cannot be examined without having a closer look to their political context as it may have a strong influence on their design and performance. Furthermore, it is also important to consider the circumstances that contributed to their emergence. This can shed light on the probability whether new voluntary agreements will develop in other circumstances. Therefore, the concept of governance capacity is used to discuss some basic principles concerning the emergence of agreements. For a more detailed picture, the role of the political context is highlighted. Even if there is not enough context information available to explain emergence fully in the four case studies, it is possible to develop some hypotheses what success factors for the emergence of agreements and company participation are.

5.3.1 Governance capacity

One reason for the emergence of voluntary agreements can be seen in the context of the problem structure and the governance capacity of public and private actors to solve environmental problems. As already mentioned, nowadays these problems are highly complex and persisting, which restricts the governance capacity of public actors. Governance capacity is defined as the possibility to design a certain policy towards a policy goal and to implement this policy. These problems cannot be solved by regulation alone, and a more comprehensive approach including regulation, voluntary agreements and other policy instruments is needed. The aspect of governance capacity with a view on public-private interaction has been analysed with more detail by Knill and Lehmkuhl (2002).

A precondition for voluntary agreements is the fact that the governance capacity of industry is high as it takes over responsibility to carry out parts of environmental policy. This high capability to contribute to policy solutions can be used by public authorities in order to implement environmental policies.

Figure 10: Ideal-type constellations of public and private interactions

		Governance capacity of public actors	
		Low	*High*
Governance capacity of private actors	*Low*	Interfering regulation	Interventionist regulation
	High	Private self-regulation	Regulated self-regulation

Source: Knill, Lehmkuhl 2002

If the governance capacity of the public actors is low, e.g. due to a lack of information on the problem, this constellation is likely to result in self-regulation or unilateral commitments. A good example for this constellation where the governance capacity of the public actor was low is the ACEA-agreement where the EU's capacity to tackle the problem of CO_2 emissions from cars was rather limited. Consequently, a voluntary agreement with ACEA became a major target in reducing these emissions.

If the governance capacity of the public actor is high as well, both actors are able to contribute to special policy measures. This constellation can lead to regulated self-regulation and thus, voluntary agreements signed by the public authority and industry. The policy style of these voluntary agreements is more cooperative. This has been clearly demonstrated by the Dutch case study. Both the government and industry were able to contribute to a policy leading to more energy efficiency. The signatories to the benchmarking covenant on energy efficiency have taken over certain obligations. Furthermore, the covenant is embedded into a framework of other policy measures such as the permits system at the local level, which indicates the high governance capacity of the government.

5.3.2 Role of the political context

Another important factor is the concrete political-cultural context in which voluntary agreements shall be developed. This is common practice for all political levels, from a supranational level like the EU level to the local level. Some contexts are quite supportive for voluntary agreements whereas other circumstances can hinder their development. Mol and Liefferink (2000) and De Clercq (2002) develop three supportive factors of the political-cultural context that can lead to the emergence of voluntary agreements:

- Firstly, voluntary agreements can better be developed in a climate of trust and consensus where public authorities and industry avoid conflict and are willing to co-operate closely in order to solve existing problems. The Netherlands has such a tradition, and a policy style of mutual trust between public authorities and industry as well as a problem-solving mode of decision-making still prevails.
- Secondly, the existence of a credible threat is another important precondition for voluntary agreements. If such a threat does not exist, there is no incentive for industry to really take action and abate pollution (as this is often linked to additional costs). In the two case studies of the German and Czech voluntary agreements, a strong legislative threat existed and was clearly an incentive for industry to take action. In the Czech Republic, even a law had already been prepared and was ready to be decided on. This surely supported fast action of the detergent industry.
- Thirdly, another condition supporting that voluntary agreements are concluded concerns the industry sector participating in voluntary agreements. If the sector is homogeneous and not too many parties take part in the negotiations, this is supportive for the achievement of the agreement. This thesis can be supported by the ACEA-agreement. The automotive industry is a highly concentrated sector with only 13 companies being organised in ACEA on the European level. A high level of organisation in a sector organisation being able to conduct negotiations with the public authority and being able to enforce the decision made under its members is also conducive for voluntary agreements. This is also valid for the Dutch, German and Czech cases where negotiations were conducted with the sector associations.

It has to be kept in mind, that different political contexts have different impact on the emergence of voluntary agreements and on the design of voluntary agreements as well. This can be demonstrated comparing the design of the Dutch and Czech voluntary agreements. In the Netherlands, already a sophisticated environmental policy existed prior to the benchmarking agreement. The Dutch experiences with voluntary agreements supported the fact that the benchmarking covenant is not a stand-alone measure but is well integrated in a policy mix. On the contrary, voluntary agreements do not have a tradition in Czech Republic and there is no policy mix concerning phosphates in surface water.

5.3.3 Initiation of an agreement and company participation

Voluntary agreements can be initiated by public authorities as well as by industry. The actor that takes the first step has to convince the potential partner of the benefits of an agreement. While the government normally does not reject environmental initiatives of industry, agreements that are initiated by public actors must show the industry the advantages of participating voluntarily.

The Dutch LTA probably provides the best information regarding the aspect of company participation, because not only branch organisations but also individual companies commit themselves to participate in the agreement. The evolved system of incentives and sanctions towards compliance is also used to push company participation by giving incentives and pushing through the threat of sanctions. The threats of stronger permit requirements together with the outlook on subsidies and a positive environmental image (corporate responsibility) are supportive. To communicate these benefits the role of business organisations is important.

All in all, the management of the whole process is crucial also for company participation. Hence, this aspect will be highlighted in the conclusions (chapter 6).

With regard to the transfer of the instrument it is maybe one of the most difficult tasks to develop and establish a framework of incentives and sanctions that support industry participation. The European cases are derived from a highly institutionalised and slowly grown system of environmental policy. Especially the Dutch system is a comprehensive framework built up in several years. Generally speaking, the case studies provide a comprehensive set of information, also for the development of a mode for China. Thereby, not only success factors but also contextual factors are important for the development of voluntary agreements. The Chinese situation has to be analysed carefully and a choice for a pilot study should be in line with these aspects.

6 Conclusion and preliminary suggestions for transferring European experiences

In the European Union voluntary approaches and especially voluntary agreements are an integral part of the environmental policy mix. Not only on European level but also in the various nation states voluntary agreements have become an often-used instrument to tackle pollution and climate change. However, not only the addressed environmental problems represent a big range of issues: the different forms of agreements, its scopes and measures, the parties involved as well as its success varies to a large extent. Even if the presented case studies demonstrate "good practice", there is room for improvements and the instrument is incrementally developed further on. In this line, the voluntary approaches differ over time following the political priority of environmental problems. The benchmarking covenant is a good example of how voluntary agreements have evolved.

With respect to the aim of the project to provide information about European experiences and deliver a basis and starting point for a comparative approach between China and Europe leading to a model for China, it is important to recognise the fact that there is not the "one and only" model in Europe. The kind of agreements in Europe is as manifold as the different institutional and cultural backgrounds of the member states. The new member states of the European Union are confronted with rapid change. In contrast to that, in many "old" member states there is already a long tradition with different policy instruments. These traditions also vary: while for example Germany focused on the emission-regulation approach, Great Britain is more oriented towards procedural methods like e.g. project appraisals.

Regarding voluntary agreements the experiences are heterogeneous. While in Germany, France and Italy agreements mostly took the form of commitments addressing phasing-out and reduction targets, in the Netherlands and Denmark the issue of climate change led to comprehensive framed agreements trying to create win-win situations between environment and economic development. Consequently, the use of voluntary agreements and the developed models should fit to the concrete situation. That means that not only the issue but the context and institutional background are important for the choice and design of the model.

The "common factor" in European voluntary agreements is the fact that public authorities and industry (single companies or sector associations) are working together to find common solutions. The use of the agreement is reasoned by efficient policy-making in terms of no need for regulation on the one hand side (public authorities) and reduction of transaction costs on the other side (industry).

Thereby a certain kind of effectiveness in order that industry can achieve environmental objectives more effectively is expected. This aspect highlights the role of adaptiveness. In contrast to conventional command and control regulation, voluntary agreements have a long-term perspective and industry is more adapted to innovations and can determine its own speed.

This last chapter provides some further concepts in order to support the transfer of experiences to the Chinese situation. Therefore, it highlights the process management along different phases of the agreement and outlines some general elements of voluntary agreements. Finally, the nine steps towards successful agreements summarise the main findings. Before discussing these aspects, the following table summarises the main success factors as analysed in chapter 5.

Table 23: Overview of success factors

Substantive dimension		**Success factors**
Problem solving capacity (environmental effectiveness)	Ambitious targets leading to an improvement of the environmental situation	Independent analysis of the problem Related to politically defined targets Going beyond business-as-usual-trends Quantified targets Time horizon and interim targets
	Compliance with agreed objectives	Legally binding status Individual company responsibility Independent organisation Internal incentives and sanctions External incentives and sanctions Transparent reporting procedure Independent verification of reported results
	Long term policy learning and other soft effects	Dissemination of information, transfer of knowledge Incorporation of intermediate organisation Institutionalisation of working groups
Legitimacy	Broad acceptance in society	Information of the public, transparency Involvement of public interests (e.g. multi stakeholder dialogue)
Costs	Cost-effectiveness of voluntary agreement	Cost calculation in advance No disproportionate burden for public authority

Source: Wuppertal Institute

6.1 Process management

A consequence from the analysis of success factors out of the case studies is, that the success of voluntary agreements depends to a large extent on a well-structured process management. The agreement cannot be seen as a single document but a part of a policy process. Within that process three main phases can be identified: the launching, the negotiation and the implementation phase. While the launching and the negotiation phase are mainly related to "voluntariness", the implementation phase possesses a rather compulsory character.

During the first phase, the launching phase, the emphasis is placed on the target setting and on the establishment of relevant conditions for successful negotiations. This phase is characterized by the recognition and definition of the problem as well as its setting on the agenda. Subsequently, it is essential to identify responsible actors, to establish a cooperative climate and to commonly start the discourse on problem solving. At that point, it is above all advantageous to attract possible actors through creating incentives and likewise "threatening" by showing alternatives for solving the problem.

The following phase consists of conducting negotiations. In a consensual manner, all parties have to identify the optimal fields of intervention and to develop strategies and corresponding measures for solving the environmental problem. Thereby, concrete aspects like an exact time frame, intermediate targets etc. are integral parts of the proceedings.

The transition from the negotiation to the implementation phase will be expressed by the definite decision to tackle the problem and the signing of an agreement or commitment. In this phase, the task is to take measures and ensure compliance. Thereby, the focal point of process management is the development of a collaboration strategy that is characterised by reporting and support mechanism (working groups etc.). Table 24 gives an overview of the three phases. Based on the success factors, it summarizes recommendations for successful action in each stage.

Despite the existence of a "good" process management, there are also some risks within the process. In regard to flexibility for example, problems of free riding, non-compliance etc. must be prevented. In the constellation of negotiations between public authorities and industry, the danger of a regulatory capture and symbolic solutions (i.e. targets correspond to business-as-usual trend) is always present and should be avoided.

Table 24: The phases of process management

Launching phase	Set up an action strategy (e.g. AIDA[20] concept) Organize a co-operative process Convince all participants of win-win situation Start with a simple sector Show alternative regulation (threat) Create incentives to participate
Negotiation phase	Define a clear time horizon Analyse the potential for emission reduction Define a "business as usual"-trend in order to set ambitious and realistic targets Set interim targets to allow earlier measurement of progress Integrate measures, monitoring, incentives and sanctions
Implementation phase	Create a monitoring procedure Carry out reports regularly Set up a working group for information exchange Adapt and modify the measures

Source: Wuppertal Institute

6.2 Elements of a "best practice" agreement

To ensure the success of a voluntary agreement, it is not crucial to elaborate a rather long and comprehensive document. In fact, a clearly structured agreement, in which the decisive aspects are precisely depicted, is much more useful. It includes the results elaborated during the launching phase as well as the resultant tasks of the implementation phase. Thus, the document is crucial for the success of the whole process. Therefore, it is recommended to integrate specific factors that can be regarded as "best practice" elements:

- Purpose of the environmental agreement
  The main topic of the voluntary agreement is the denotation of the agreement's purpose through specifying the concerned environmental issue. Through explicitly defining the environmental problem that has occurred and additionally naming political environmental targets, the meaning of the agreement and its aim is explained, not only to the signing partner but also to courts and the public.

20 AIDA is an acronym for a marketing concept and means Awareness, Interest, Desire and Action (e.g. Hackley 2005: 28)

- Scope of applications and environmental targets
  To depict the fields of intervention precisely is an integral part of the agreement process. The involved parties have to decide about targets and measures. The definition of quantitative and qualitative targets within the overall objective is the main task of the agreement text. Thereby, intermediate targets as well as a concrete time frame have to be set up.

- Actions by the parties in pursuit of the environmental targets
  Declarations of intent, identification of fields of intervention and the definition of environmental targets are of no account if no action follows on the agreement. The way from theoretical reflections to action is a critical part of the whole process. Therefore, supporting definition of actions to reach the targets, e.g. energy-efficiency measures, are strongly required. The elaborated catalogue of activities has to be itemized in the agreement text. To ensure the effectiveness of the process e.g. the institutionalisation of working groups and to include independent advice could be helpful.

- Monitoring of the environmental agreement and monitoring indicators
  As all elaborated measures shall be applied effectively and the institutions (e.g. environmental learning groups) shall conduct their function, the progress towards the targets has to be constantly controlled. The agreement document must set the framework for the requirements concerning a regular reporting procedure and monitoring methodology. Comparable evaluation criteria, timing procedures to assess the process, as well as the responsible institution, preferably an independent consultancy, should be codified. The outcomes of the monitoring serve as the information base for the process management during the implementation phase.

- Sanctions
  The charm of voluntary agreements results from their voluntariness. Nevertheless, agreements replace to a certain extent regulative measures. Incentives and sanctions built-in to the agreements can help to avoid possible failures like free-riding as well as ensuring serious measures. These sanctions have to be adequate for the specific situation.

- Joining/validity of voluntary agreements and grounds for termination
  Formal requirements like the date of joining, the validity of the voluntary agreement and the grounds for termination are further and important elements of a best practice agreement, as they constitute the operating framework for the process and ensure a common definition of the tasks.

- Access to information
  An easy and good access to information maintains one of the key points for transparency. In case of non-dissemination of information on the process, the legitimacy of the agreement is not fully ensured. On the other hand side, sensible data cannot be fully published. Thus, it is highly recommended to incorporate the obligation on giving access to information into the agreement.

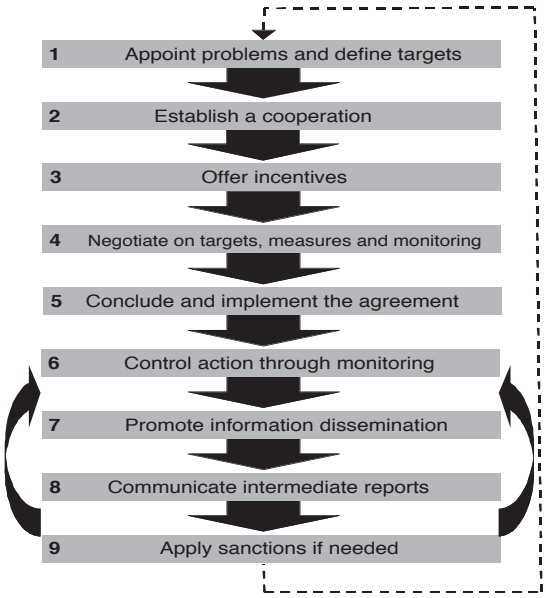
The relevance of a well-structured agreement text is obvious, as the phases of the process possess opposed characters — voluntariness (launching/negotiation phase) versus obligation (implementation phase), which have to be both considered. Therefore, the balance between flexibility and demand for success in defining targets, introducing measures etc. has to be constantly ensured, as it is crucial for the process to come off.

6.3 Nine steps towards a successful agreement

An integrated view on success factors is possible by designing a process management strategy. Instead of a summary, nine decisive steps will be outlined that show — in brief — how "good" process management can be implemented and a successful environmental agreement can be reached. Thereby, it should be stressed that the process shall not be reduced on few proceedings. In fact, many steps recur or will be accompanied by further activities. Furthermore, these steps constitute proposals that should not be regarded as instructions, but as recommendations.

At the beginning of the agreement process, awareness concerning an environmental problem should be raised, followed by the declaration of the overall target to tackle it. The raising of interest, mainly caused by naming the problem, leads to the setting up of a cooperation of collaborative actors (2). This is accompanied respectively followed by the offering of incentives (3) to render the agreement attractive for more related companies. Reaching the fourth step, the commencement of the negotiation process on targets, measures, monitoring etc. is on the agenda. Thereby, it is recommended to define (intermediate) ambitious targets and to set up a clear time horizon to prevent a business-as-usual scenario. Decisions on organisational structures should be passed as well, to involve for example independent actors in the monitoring process. In the next step, the agreement will be concluded (5). The sixth and one of the most important steps constitutes the control of action through monitoring. That should be accompanied by the promotion of information dissemination (7), as it supports transparency and constitutes — for government and private actors — a further instrument to control the process. To assess the efforts and to estimate if the process is on a promising way, precise and detailed monitoring and reporting procedures are required (8). To ensure comparability of the results, monitoring and reporting should be conducted regularly and by an independent consultancy. The application of sanctions marks the last step and should be carried out in case of non-compliance of agreed targets. After the final evaluation, actors have to decide if new or further problems exist and, if needed, to restart the process.

Figure 11: Nine steps towards a successful agreement process



Source: Wuppertal Institute

An important point within this scheme is the offer of incentives for industry. In the case of energy efficiency, energy savings lead to a reduction of costs. For future research, an outlook towards the flexible mechanisms of the Kyoto Protocol could be useful. The opportunity of incorporating a CDM clause as an incentive for signing voluntary agreements by linking them with the Clean Development Mechanism should be assessed. The Clean Development Mechanism facilitates climate friendly investment in countries in transition by granting tradable emission reduction certificates for projects that lower greenhouse gas emission. Nevertheless, incorporating a CDM clause into voluntary agreements as an incentive to sign thus requires careful consideration of legal specificities of the international climate change policy regime. Thus, CDM could maybe constitute a useful supplement to voluntary agreements, but cannot replace them. Due to the complex context conditions, further research is needed.

This study provides a broad range of information regarding European experiences with voluntary agreements. The major tasks, elements and steps have been identified. There are several factors important to recognise. The future task is to reflect the results together with the Chinese partners and draw conclusions for the comparative study. The Chinese situation — regarding environmental problems, the political and administrative system as well as political traditions — has to be considered and mirrored with the European experiences. The forthcoming task is to analyse, where voluntary agreements can be introduced as a successful tool of industrial environmental management. It has to be identified, which role the different presented voluntary agreement options could play in China's environmental policy.

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Links concerning the case studies

The Long Term Agreements on energy efficiency and the benchmarking covenant – the case of the breweries

Institution concerned	**Role of the institution**	**Reference**
Ministry of Economic Affairs	Supreme authority that represents one of the signatories to the Dutch Long Term Agreement and the benchmarking covenant	*http://www.minez.nl/*
Ministry for Housing, Spatial Planning and the Environment	Supreme authority that represents one of the signatories to the benchmarking covenant	*http://www.vrom.nl/pagina.html*
The Confederation of Netherlands Industry and Employers (VNO-NCW)	*VNO-NCW is the largest employers' organisation in the Netherlands (170 (branch) associations); constitutes one of the signatories to the* Dutch Long Term Agreement and the benchmarking covenant	*http://www.vno-ncw.nl*
SenterNovem	Dutch Energy Agency; serves as independent third party in the agreement process; had the executive responsibility of the LTA programme	*http://www.senternovem.nl/senternovem/*
Dutch Brewers' Association (Centraal Brouwerij Kantoor/CBK)	CBK represents the interests of nine breweries in The Netherlands, who are responsible for 99,9 per cent of the total beer production in the country; one of the main actors within the benchmarking of the breweries	*http://www.cbk.nl/*
Benchmarking Committee / Verification Bureau Energy (VBE)	Independent authority that controls and monitors the implementation of the benchmarking covenant	*http://www.benchmarking-energie.nl/*
KWA Business Consultants	Independent agency, incorporated in the benchmarking process	*http://www.kwa.nl/*

ACEA-agreement on the reduction of CO_2 from passenger cars

Institution concerned	Role of the institution	Reference
European Commission - Directorate General Enterprise and Industry	Public authority that develops environmental policies for trade and industry; one of the signatories to the agreement	*http://europa.eu.int/comm/enterprise/index_en.htm*
European Parliament	The European Parliament represents the EU's citizens and is directly elected by them; one of the parties that are taking part in the monitoring	*http://europa.eu.int/institutions/parliament/index_en.htm*
Council of the European Union	The Council of the European Union represents the individual member states; one of the parties that are taking part in the monitoring	*http://europa.eu.int/institutions/council/index_en.htm*
European Automobile Manufacturers Association (ACEA)	The multi-national association represents the 13 major automobile manufacturers in the European Union (e.g. BMW, Volvo); one of the signatories to the agreement	*http://www.acea.be*
World Wide Found (WWF)	A Non-Governmental Organisation and nature association that is one of the main critics of the ACEA agreement	*http://www.wwf.org/europe*

Agreement on gradual reduction of impact of laundry detergents on the environment

Institution concerned	Role of the institution	Reference
Czech Soap and Detergent Products Association (CSDPA)	The national association represents several national and international producers and distributors of soaps and detergents that were active on the Czech market; it constitutes one of the signatories to the agreement	*http://www.csdpa.cz*
Ministry of the Environment	Supreme authority that represents one of the signatories to the agreement	*http://www.env.cz*
Institute of Chemical Technology, Prague/Czech Republic (former Chemical and Technology College)	Independent institution whose experts were incorporated in the monitoring	*http://www.vscht.cz/main/ index.html*

Commitment on phasing out of polybrominated diphenylethers (PBDE) as flame retardant in synthetic materials

Institution concerned	Role of the institution	Reference
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	Public authority that constitutes one of the signatories to the agreement	*www.bmu.de/*
Federal Environmental Agency	Public authority that constitutes one of the signatories to the agreement	*http://www.umweltbundesamt.de/*
Federal Institute for Materials Research and Testing	Public authority; incorporated in preparatory talks	*http://www.bam.de/index4.htm*
Association of the Chemical Industry (VCI)	Umbrella organisation, represents all branch associations within the chemical industry; one of the signatories of the commitment	*http://www.vci.de/default.asp*
PlasticsEurope (former Association of Synthetics Processing Industries)	Addressed branch association of the VCI	*http://www.vke.de/de/index.php*